THE ARCHITECT & BUILDING NEWS

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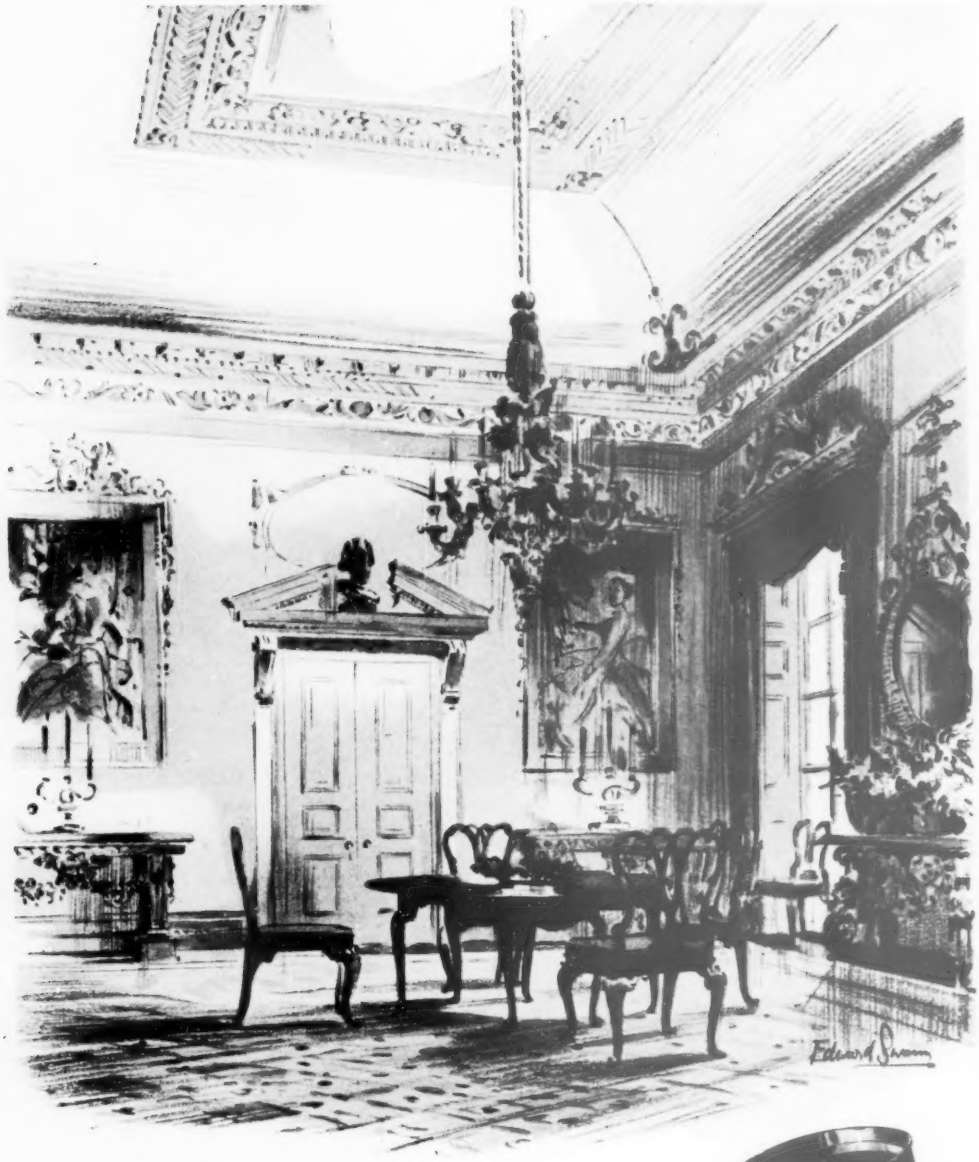
DECEMBER 27, 1951 · VOL. 200 · No. 4332 · ONE SHILLING WEEKLY



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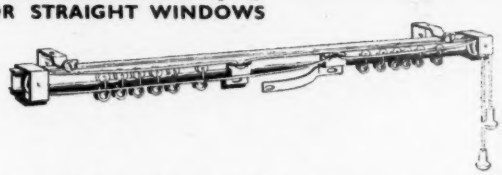

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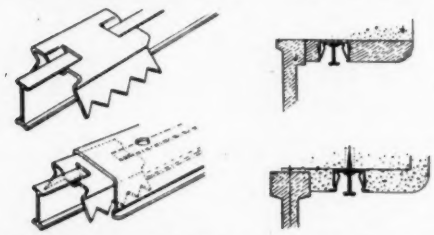

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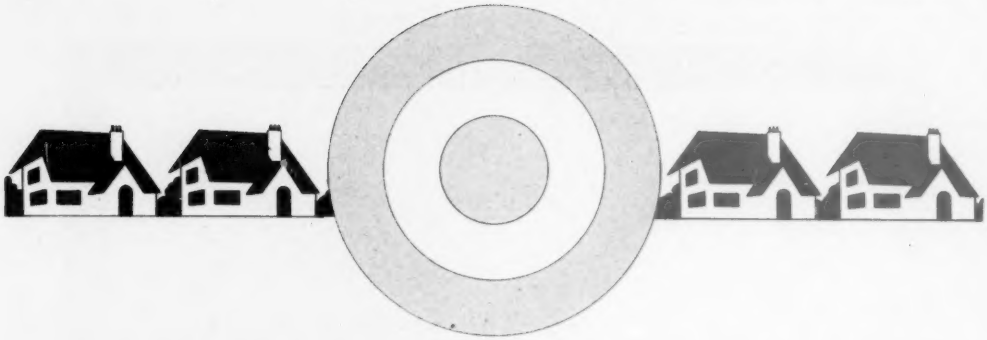

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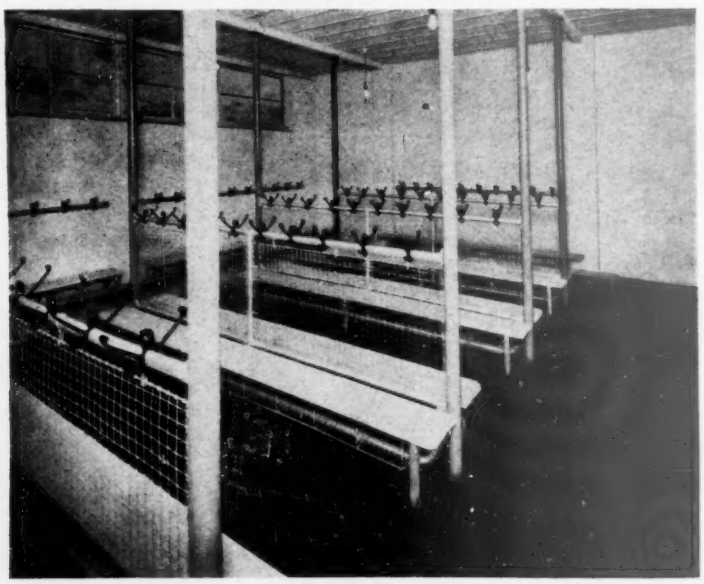
Cloakroom equipment installed at Donnington Wood Infants' School, Salop.
County Architect : A. G. Chant, F.R.I.B.A.



Cloakroom scheme fastened to existing Stanchions

MAYES' STORE, SOUTHAMPTON

Architects: Messrs. Gutteridge & Gutteridge for main entrance and offices in N.E. Wing.
Messrs. Tribe & Wakeham for interiors of Showrooms, Restaurant, Kitchen and main shop windows.

Contractors:
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See Illustrated article on pages 743 to 746 of this issue

The versatility of steelwork

The illustration shows the crane gantry, and the steelwork of the coke, ore and limestone bunkers for an ironworks.

In contrast with this riveted lattice construction is the welded portal frame construction for a canteen building, assembled from easily transported components.

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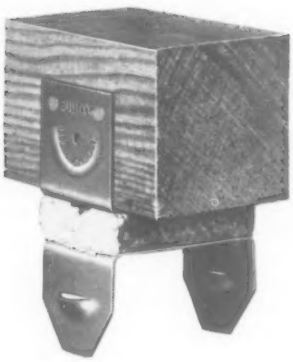

THE ADAMITE COMPANY LTD., Manfield House, Strand, W.C.2 Temple Bar 6233/6

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THE ARCHITECT & BUILDING NEWS

December 27, 1951

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NINETEEN FIFTY-ONE

THE year draws to its close, fading out like any other *anno mundi;* yet for this country 1951 has some greater significance, and for most people even outside these islands the marking of the way by the Festival of Britain has fixed the year with more certainty into the mesh of history than has been the fate of many others.

Whatever may have been the criticisms of the exhibition on the South Bank—and Britain would not be Britain if there were none—there is no doubt that the Festival, as kept in many cities, towns and villages of the Kingdom, has led to a great deal of real co-operative work and thinking, of mutual enjoyment and accomplishment that cannot but have effect upon the future. Many places, from village greens to city squares, have been tidied-up and look a little better for the experience. Temporary organizations formed for Festival activities have grown and still are growing into something more permanent, to aid the active life of many communities. Although London was the centre of the Festival, its very vastness and complexity may lead less to such permanences, and it is therefore the loser to that extent, even though its memories may last for many years to come.

The problem of the permanent use of the South Bank, the disposal of the useful or ornamental buildings which made up the show will be with us for some time, in spite of many letters and journalistic competitions in the columns of our contemporaries. We have no wish now to add to the many sensible and nonsensical suggestions that have already been made, but we would urge that the whole of the South-side planning be related to London as a whole and considered as a long-term business that should have a master plan and not be treated in isolation. One of the first things, for instance, is to visualize the removal of Hungerford Bridge and of Charing Cross Station—it is now more than thirty years overdue—and see what the whole might look like as a result. Any plan will be different if these incongruous anomalies are to be removed. To plan to them, as to existing and irremovable obstructions, is to plan without vision.

1951 in general has been a milestone in another way. That there has been a general election and a change of government has been merely a symptom and almost an accidental one. Twenty years ago another first year of a decade marked the start of an economic blizzard that shook the English-speaking world and much else to its roots. It is to be hoped that the inflation that marks 1951 does not presage a repetition of history. Although the present high level of exports is maintained, there seems but little prospect of a great reduction of imports. Inflated prices and the necessity for obtaining non-home-produced materials from abroad, for example, non-ferrous metals, timber, asphalt, asbestos and many others, have full response in the raising of building costs.

All the while the major national effort is tied up with the problem of increasing exports there must be a corresponding and accumulative decrease in capital expenditure, whether it is for housing, roads, schools or hospitals. To expand capital expenditure, even in industry, means reduction in all other types of building, however much they may be wanted, even though, be it argued, that it is necessary to assist industrial expansion itself. Where materials or a labour force is absent or in short supply the products resulting from their use must likewise be eliminated or curtailed.

The general prospect is not, therefore, from any survey of 1951, very bright for the immediate future so far as building is concerned. For architecture, the cultural side of building, it is naturally and proportionally dim. The Festival Year produced a

number of architectural experiments which it would be interesting to follow up immediately and which, in any event, may well influence the future, if the future finds itself asking for notable architecture.

The fact that Coventry Cathedral, resulting from a competition in this year, is now definitely "on the stocks," approved by City and Church and by the Royal Fine Art Commission alike, may provide a solitary salutation to the Mother of the Arts within the coming year or two.

But looking round at all the indications resultant from the year of grace now slipping into the limbo in which years are stored until they are raked over and reassessed by historians, it seems that after all it is like many other years—it might have been worse. To get away from it we must go forward nto still another year, maybe of grace or the lack of it, who can tell; a newer time that leaves us with the cold war, rearmament and an unplanned world with its problems of diminishing space for growing food, with its increasing population, an insatiable thirst for speed, a threat of inflation and all the other problems of an adolescent civilization which will leave us with lots to do.

The passing of this mid-point of the Twentieth Century is, well, just another opportunity to snatch up the blinkers of human optimism once more and to wish all our readers "A happy and prosperous New Year." After all is said and done, the human race may yet have another 100,000,000 years or so in front of 1951, and the law of probability suggests that many men may say that many of those years might have been worse!

EVENTS AND COMMENTS

THE A.B.S. BALL

What was last year the A.B.S. centenary ball this year became the A.B.S. Annual Ball. It was daring of the organizers to put on such a show two years running and if they did not sell quite as many tickets as they had hoped the numbers were well up to last year's. I enjoyed myself very much indeed and all I have spoken to did the same. There was, however, some criticism of the arrangements and in supporting I hope I will not offend. First the band played almost all old and corny tunes, second the cabaret, though very amusing in parts—the acrobatic dancing with a female dummy was brilliant—was much too long, and thirdly the draw and prize giving—saving the gracious presence of Miss Moira Lister—was long and dreary even when it was audible. Broadly speaking these are the same comments as I made last year. When this year's ball was announced I said that I hoped that last year's mistakes would be avoided.

With these interruptions and the longer one caused by supper I only danced three times. I realize that the whole idea of the party is to raise money and judging by what I saw those present supported the various brands of legalized highway robbery with a will. All the same if the ball is to be a success as an annual event more time must be allowed for dancing. The organizers must have worked very hard indeed and I hope that the A.B.S. will reap a substantial reward from their labours. As far as I could see nearly everyone was there. The year's roll by and one begins to think that one knows all the architects but there were hundreds of total strangers to me at the Dorchester.

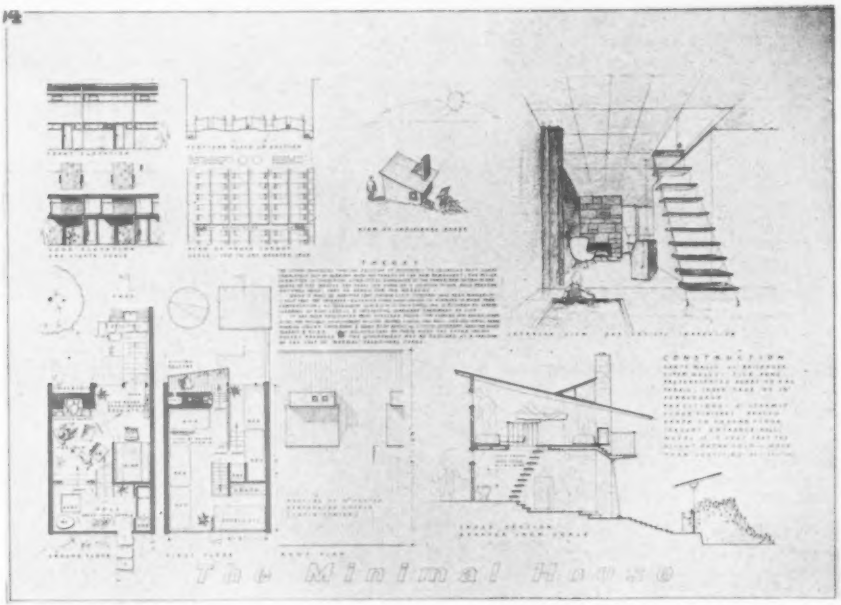
A.B.S. Competition: Winning Design by T. A. Greeves, B.A. Arch. (Cantab.), A.R.I.B.A.

A.B.S. COMPETITION

The competition for a memorial to the "Good Old Days of Architecture" produced 57 entries, the seven chosen by the jury, which consisted of Mr. H. S. Goodhart Rendel, Mr. Osbert Lancaster, Mr. John Summerson and Mr. Rowland Emett—all sat at the president's table with their ladies—were exhibited and the generality was asked to place them in order of merit. On the whole I agreed with the judges. There were some charming drawings and I was delighted to see that the editor of the *A & B.N.* was awarded a place.

R.I.B.A. DINNER AND RECEPTION

I am pleased to hear that the R.I.B.A. dinner is to be revived. It is or was a noble occasion even if attendance was strictly limited. The reception is to be held on Friday,



A.B.S. Competition : 2nd Prize. Peter Taylor, Student, A.R.I.B.A.

May 23, and believe it or not there is to be a licensed bar. I hear that several people are claiming this concession to the thirsty as a personal triumph. All I can say is that ever since I have occupied this page I have clamoured for strong drink on this important and otherwise thoroughly enjoyable occasion; indeed you should have seen the letter I received from Mr. Spragg last time I mentioned it—but alas it was not for publication. Anyway, hurrah for the bar.

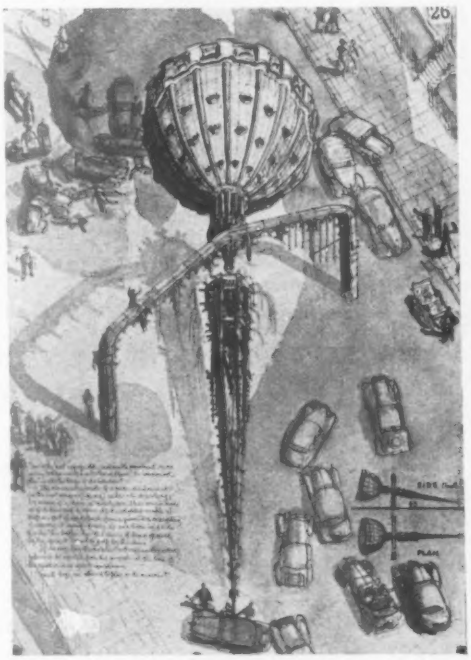
A.A. STUDENTS CARNIVAL

More serious readers will hate the many references to parties this week but I must mention the A.A. Students Carnival which, if it wasn't quite the glamorous affair which the *Evening Standard* made it out to be, was certainly a good party. The short pantomime improved with each performance I am told. It had some good lines. "Remember," said a Roman centurion with an American accent, "that there are only ex-eye-vee shopping days to Saturnalia."

Fancy dress, though more widespread, was perhaps less striking than last year. There was some hearty country dancing, a film show and a puppet play, but the hit of the evening was a remarkable jazz band which played non-stop for hours with almost alarming gusto.

MR. CLOUGH WILLIAMS ELLIS

I am sure that you will all join me in sympathizing with Mr. Clough Williams Ellis on the loss of his house, Plas Brondanw, and virtually all his belongings, by fire. In true Clough spirit he is already at work on the task of reconstruction. As Happy a New Year as possible, sir!



A.B.S. Competition: 3rd Prize.
Graham Finch, Student, R.I.B.A.

SOUTH BANK SELL UP

I would have liked to have been at the South Bank sale but I had to content myself with a quick visit to buy my quota of two chairs. The scene was macabre, a horde of duffle-coated architects swarming in the dimness beneath the rocket café, each seeking two perfect chairs. It was a farewell meeting of the South Bank Supporters' Club. I only wished I had a camera with me to take the Director of Architecture himself walking away with two chairs and a dove—could democracy go further?

VERSAILLES IN DANGER

According to *Time*, the Palace of Versailles is in considerable danger of collapse due to faulty gutters letting in water to rot the timber of roofs and floors. In 1925 John D. Rockefeller, Jnr., gave nearly a million and a half dollars, most of which was spent on repairs to the roof. Now a further fifteen million dollars is needed. No allocation has so far been made by the French Government and no millionaire is in sight.

ABNER

NEWS OF THE WEEK

County of London Plan

The Development Plan, 1951, submitted to the London County Council by their Town Planning Committee, has been approved and is to be submitted to Mr. Macmillan.

The Plan will be published in book form early in 1952 and outlines a 20-year development plan for the Administrative County of London. Expenditure would be £27 m. a year.

Poole Technical College Competition

The premiated and commended designs in the Poole Technical College Competition will be on view at the Royal Institute of British Architects, 66, Portland Place, W.1, from Friday, January 11th, to Friday, January 25th, 1952, weekdays 10-7 (Saturdays 10-5).

Southbank Competition

In the competition "What to do with the South Bank," organized by the *Sunday Times*, the first prize of £100 was won by Denis Mason Jones, M.A. (Cantab.), A.R.I.B.A.

The assessors were Sir Alan Herbert, John Summerson and Sir Stephen Tallents. There were 654 entries.

Edinburgh College of Art

The annual report of Edinburgh College of Art states that the past year saw the first small decline in the number of students in the School of Architecture from the post-war peak. Although the reduction was a small one, the report states that it was a welcome step towards the stabilization at a number which would ease the problems of accommodation and strengthen the esprit de corps which had always been a marked feature of the Edinburgh School.

Changes in the profession and technical progress have been met by modifications of the syllabus, and all students are now required to spend one year acquiring practical experience before being eligible for election as Associates of the Royal Institute of British Architects. In addition the degree course has been increased from five to six years in duration.

CORRESPONDENCE

N.U.S. Report

To the Editor A. & B. N.

Sir,—The publication of the National Union of Students Report of May of this year has again brought forth the usual crop of contradictory conceptions of what is actually going on in the spheres of Architecture and Building behind the "Iron Curtain."

In order to check up on both claims and counter-claims and at the same time "widen our contacts" as we are asked to do, I put forward the suggestion that a party of British Architects visit the U.S.S.R., and a similar party of Russian Architects visit this country, and that the two reports be published together.

As there is apparently so much to see and so little time in which to see it, the suggested number in each case was 50, in order that they might split up into small groups, of say, ten to go their respective ways.

The itineraries would of course be agreed beforehand and the same freedom promised to the British group as would be given the Russians when visiting this country.

The finances for this venture could surely be arranged by the several societies who claim to act for peace, culture, and a better understanding with our fellow humans, aided perhaps by the Governments and the Press who would publish comments on the reports.

The organization for all this should obviously be carried out, in the first place, by those who have had the longest and most frequent contacts with the U.S.S.R., and to this end I would suggest The Association of Building Technicians, aided, perhaps, by Professor J. D. Bernal and Dr. Hewlett Johnson, the Dean of Canterbury.

Perhaps the above interchange of visiting parties of members of the Architectural professional could be followed by those of other professions and would result in the advancement of knowledge plus a better understanding between the two countries thus obviating the drift towards war.

I am, etc.,
SIDNEY LOWETH.

This Iron Curtain Stuff

To the Editor A. & B. N.

Sir,—In common with Mr. Owen, I have no desire to live in or even design a concentration camp, either on this or for that matter, on the other side of the Iron Curtain.

Not having followed his apparent example by visiting the Soviet Union, upon which he writes with such obvious authority, I can also only take Mr. Peter's word for it when he tells us that "officially-built" houses there are for Party members only.

As one of a rapidly diminishing minority of political freethinkers however, I would like to ask if I may, what is the difference between a Russian who wangles a new house on the strength of Party membership, and an Englishman who jumps his local housing queue by virtue of Local Government or Civil Service employment?

And by whom, incidentally, are the "unofficial" houses in the Soviet Union built?

I am, etc.,
HOWARD FROBISHER.

Planning

To the Editor of A. & B. N.

Sir,—I am grateful to Mr. Furness for demonstrating so conclusively one of the points I made, namely, that agreement in this or any matter will never come from the "clubbing" method of argument and action.

As far back as December, 1944, the then chairman of the Executive Committee of the Town and Country Planning Association in a paper addressed to the National Conference on New Planning warned that in a democracy like ours planners are the servants of the public not its boss, and that they cannot reverse the situation and boss the boss.

I think a far more humble and understanding approach to the public is required if any real success is to attend the efforts of the planners.

Could it be that Mr. Furness has been trying to do either of these things and has come away a little sore from the encounter?

I am. etc.,
M. R. FLETCHER.

A.B.T. Diary

The Building Technicians' Diary for 1952 published by the A.B.T. has now been completely sold out.

North elevation to road before alterations

S. elevation to garden on completion of first phase

Alterations to Chapel House, Lansdown, Bath

ARCHITECTS: SNAILUM, HUGGINS AND LE FÈVRE

THIS house, now the home of Mr. and Mrs. Paul Backhouse, was originally a stable building adjoining the now burnt out All Saints' Chapel, opened in 1794 and built to the design of John Palmer, of Bath.

Before purchase by the present owner in 1947, a partial conversion had been carried out and the plans show the building in this form, consisting of a stable or garage with a gallery, a bathroom and other rooms in no particular relationship one with another. There was also a garden or store room cutting into the sloping site at lower level, which had become very dilapidated.

The scheme now described has been carried out in two phases as and when it has been possible to obtain building licences and a third phase is still anticipated to deal with the important but costly operation of raising the main roof so as to give more adequate first floor accommodation. This particular item was envisaged as one of the first to be done but it has had to be postponed under both phases so far carried out on account of cost and licensing restrictions.

The first phase, therefore, was the rearrangement of the main block, by providing a Kitchen and Dining Room and improving the construction of the back or South wall. Lavatory basins were fitted in bedrooms, new block flooring was laid on the ground floor and the garden front was opened up with larger windows. A new fireplace was fitted in the Living Room operating radiators in this room. A new front door incorporating glass blocks to light the Hall was also put in at this stage.

The first floor accommodation was improved by the formation of dormer windows, but it will be seen that the low roof pitch still restricts the adequacy of the bedrooms, which are still approached from different staircases.

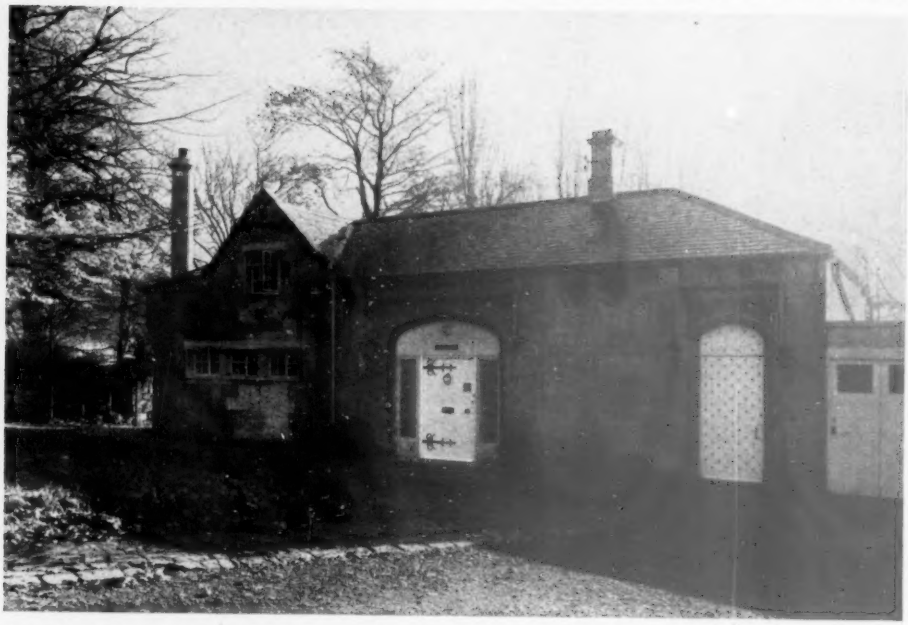
The photograph shows the garden front at the completion of the first phase with the dilapidated garden room still standing.

The second phase was put in hand due to the necessity of providing further bedroom accommodation, which, for health reasons, was required on the ground floor, and the sloping site made this possible only by building a wing roughly on the site of the garden room, which was demolished. This steeply sloping site necessitated building up to main ground floor level and this has been done by the formation of a Sun Loggia and Garden Store as a lower storey to the new wing. As this wing covers approximately the same area as the old Garden Room, the new addition did not qualify for the payment of a Development Charge. The two new bedrooms and bathroom thus provided have South and East aspects and share with the Sun Loggia magnificent views over the attractive sloping garden to the City of Bath beyond.

The original building was of a quaint revival "Gothick" style and the recent adaptations have been carried out in a simple idiom chosen to be economically possible but not to offend against the original work, such as remained, or the native work of the neighbourhood.

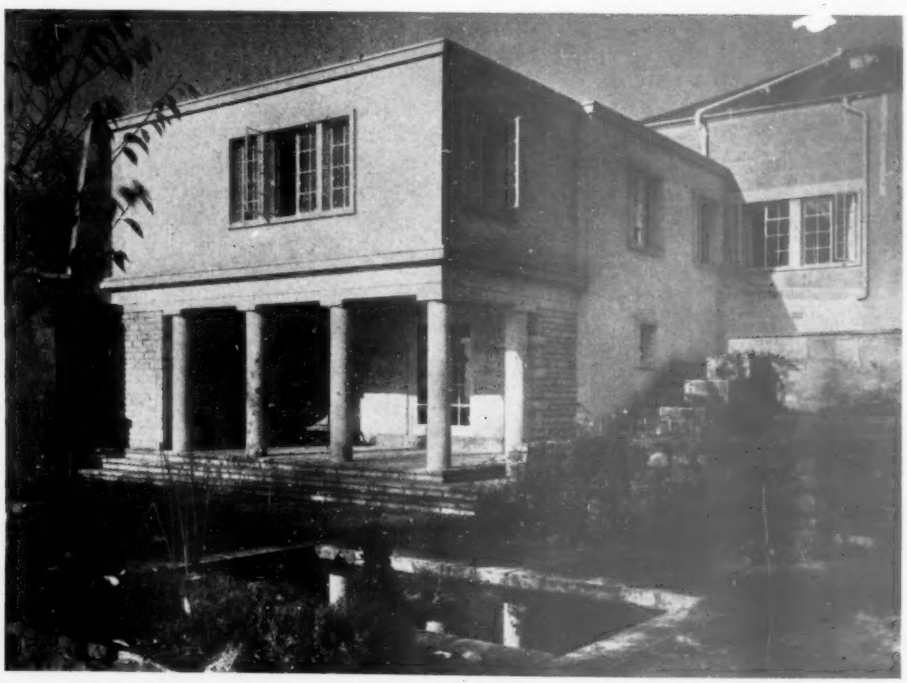
Builders: *First Phase, Messrs. F. J. Amery & Sons, Bath.* Second Phase, *Mr. C. Beazer, Bath.*

The Living Room

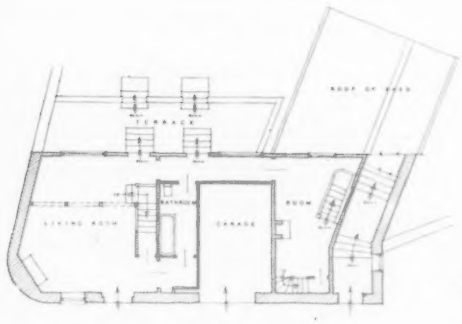


North Elevation to road.

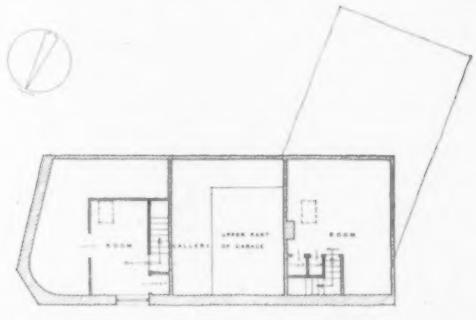
The New Wing.



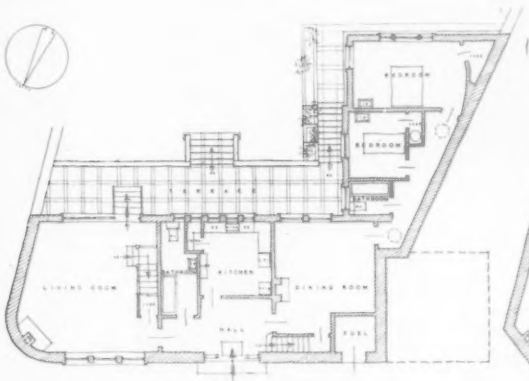
CHAPEL HOUSE, LANSDOWN, BATH



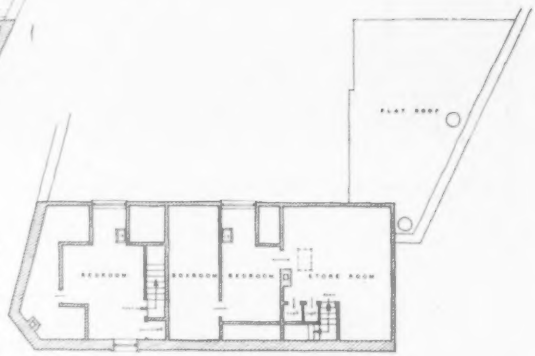
GROUND FLOOR PLAN BEFORE ALTERATION



FIRST FLOOR PLAN BEFORE ALTERATION

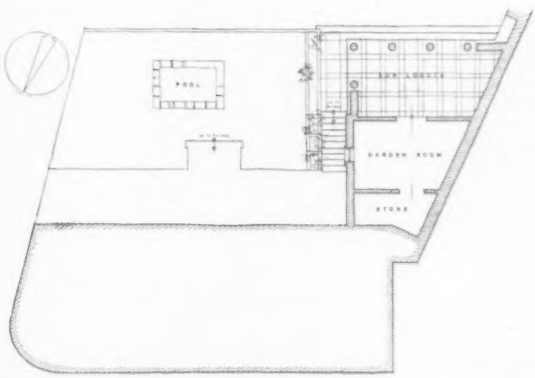


GROUND FLOOR PLAN AS ALTERED



FIRST FLOOR PLAN AS ALTERED

SCALE OF FEET 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

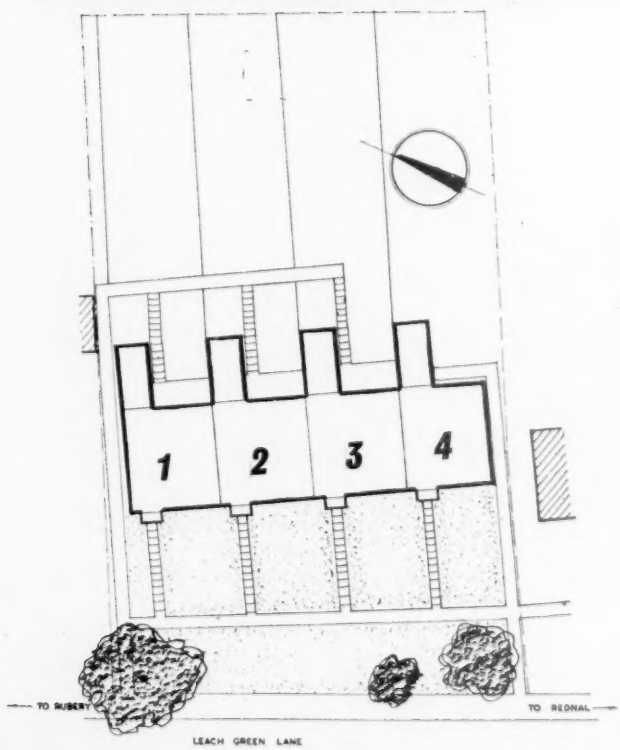


UPPER GROUND FLOOR PLAN AS ALTERED

architects:
SNAILUM
HUGGINS &
LE FÈVRE

CONVERSION AND ADDITIONS

TERRACE HOUSES AT REDNAL FOR



These houses were designed by students of the third year of the Birmingham School of Architecture with David Radford primarily responsible together with Geoffrey Darke, Michael Keyte and David Meylan. They were built by Langley Brothers.

The work has been given to the School through the kindness and co-operation of the Housing Committee ; Mr. H. J. Manzoni, Chief Engineer and Mr. Davies, Chief Architect.

The students visited the site while the houses were being built and kept records of progress.

The school is also co-operating with Birmingham University Social Department in studying the tenants' reactions, and they will also be able to return to the houses to note what snags have developed.

General

The site is situated on the edge of the estate overlooking the Lickey Hills to the South with a moderate rise from rear to front. Four houses were asked for.

Construction and Materials

The houses which are traditional in type have 11in cavity brick external and party walls, 4½in brick load bearing partitions and 3in breeze partitions. The party walls have been kept as solid skins being pierced by one joist only, thereby keeping sound transmission to a minimum.

Standard Metal window frames and door and window surrounds have been used.

Roof consists of 7in x 2in rafters with 1in "Thermacoust" slab covering and "Ruberoid" finish, and with plasterboard and screed under. Concrete in-situ flats over porches and outhouses.

Finishes

London Brick Co. Rusticfaced facing bricks.

Blue bricks below D.P.C.

Internal walls : distempered on plaster.

Ground floors : Semastic tiling on concrete.

First floors : timber.

All metalwork and woodwork painted.

Services

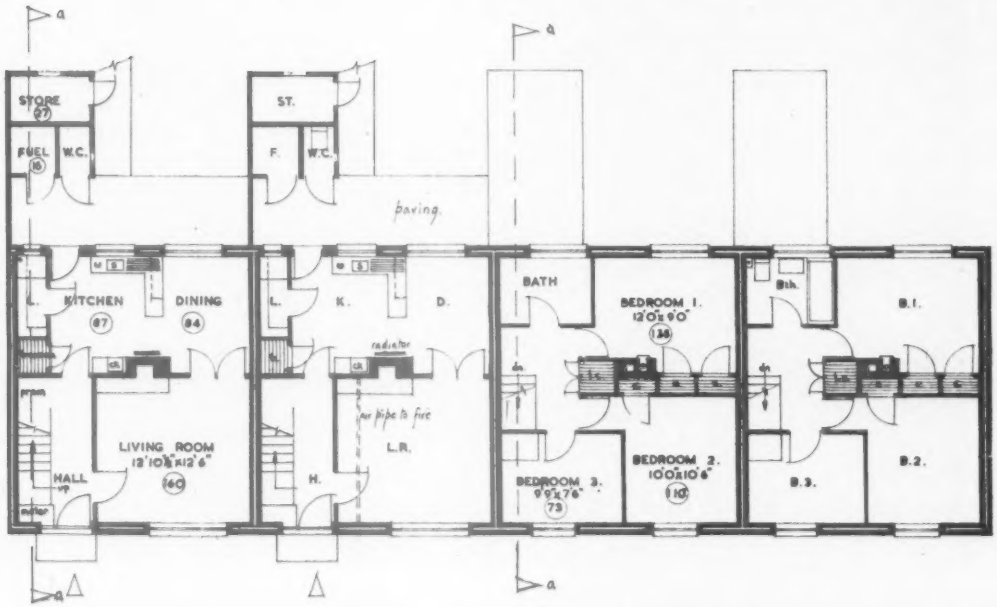
Internal plumbing.

Water heated by Marathon back boiler fire in the living room with one radiator off.

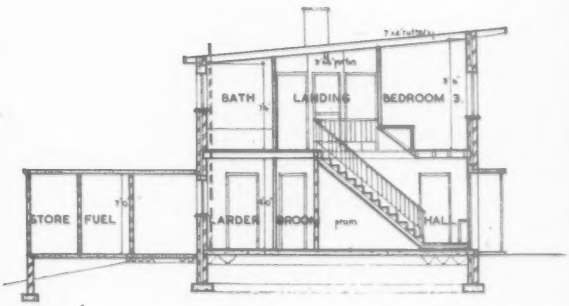
A gas fire provided in one of the bedrooms.

BIRMINGHAM CORPORATION

designed by Third Year Students at the Birmingham School of Architecture

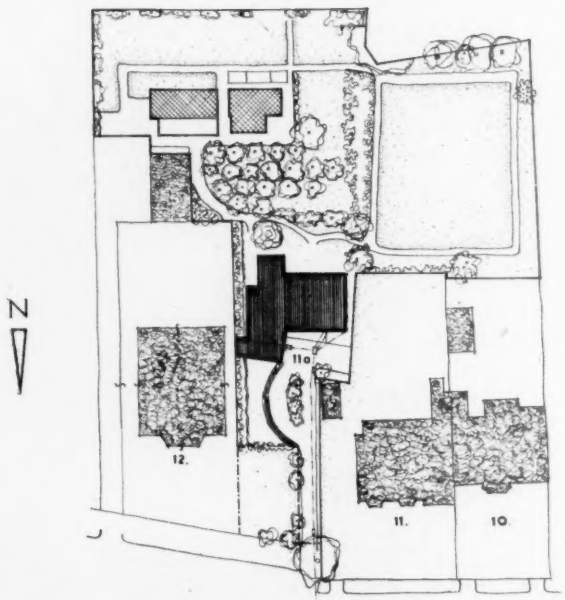


GROUND FLOOR PLAN FIRST FLOOR PLAN



SECTION a-a

The terrace with windows to the dining and living room.



Streatham common. South side.

House at Streatham Common South

architect:
A. E. THURMAN MATTHEWS
A.R.I.B.A.
Covell & Matthews

THE house was built to a floor area of 1,220ft super, excluding the garage. The siting of the house was governed by the need for seclusion from a busy highway and the changes in level of the ground. There is a 2ft sheer change in level in the centre of the site and this feature was incorporated in the design. The site was formerly the ornamental garden, orchard and kitchen garden of a large house, all of which features have been retained.

Construction

The foundations were reformed (2ft 3in x 9in) of concrete reinforced top and bottom (clay sub-soil and line of old agricultural drainage ditch). 13½in Warnham Common Stock brick foundation wall to ground level. 11in cavity wall of Wealdon Stock bricks flush pointed, with 2 course slate d.p.c.

Internal partitions: 2in Broad Acheson blocks and 4½in Wealdon stocks and 4½in flettons. Insulated copper roof construction incorporating 1½in woodwool slabs. 4in x 2in deal composite trusses with Bulldog timber connectors.

Floor slab: 4in concrete on 6in hard core, 2 coat bitumen damp proof course over concrete floor and screeded for wood block and semastic tile flooring.

Services

The heating system is a low pressure hot water combined heating and indirect hot water supply system with gravity circulation. Central heating coil pipe under brick paving in Living-Dining Room, supplemented by two radiators. One radiator in Bedroom 1.

Finishes

Semastic tile floors to all rooms other than Lounge-Dining Room which has Windsor wood block flooring and 2in blue paving brick heating panel along folding doors to terrace.

Walls internal: Lounge-Dining room and Hall Wealdon stock bricks flush pointed. Wallpaper to end walls. Bedrooms, Kitchen, Bathroom and Utility—plastered; dado to Bathroom, Kitchen and Utility—cement cold glaze.

Ceilings: Sundeala board (natural) to Lounge-Dining Room, Kitchen, Hall and Bedrooms 2 and 3. Plaster to Utility room, 2nd w.c., and Bathroom. Vermiculite plaster to walls and ceiling of Bedroom 1 and Dressing Room.

Internal woodwork: Doors—natural treated with wood preservative and button polish. Skirtings, architraves, etc.—painted.

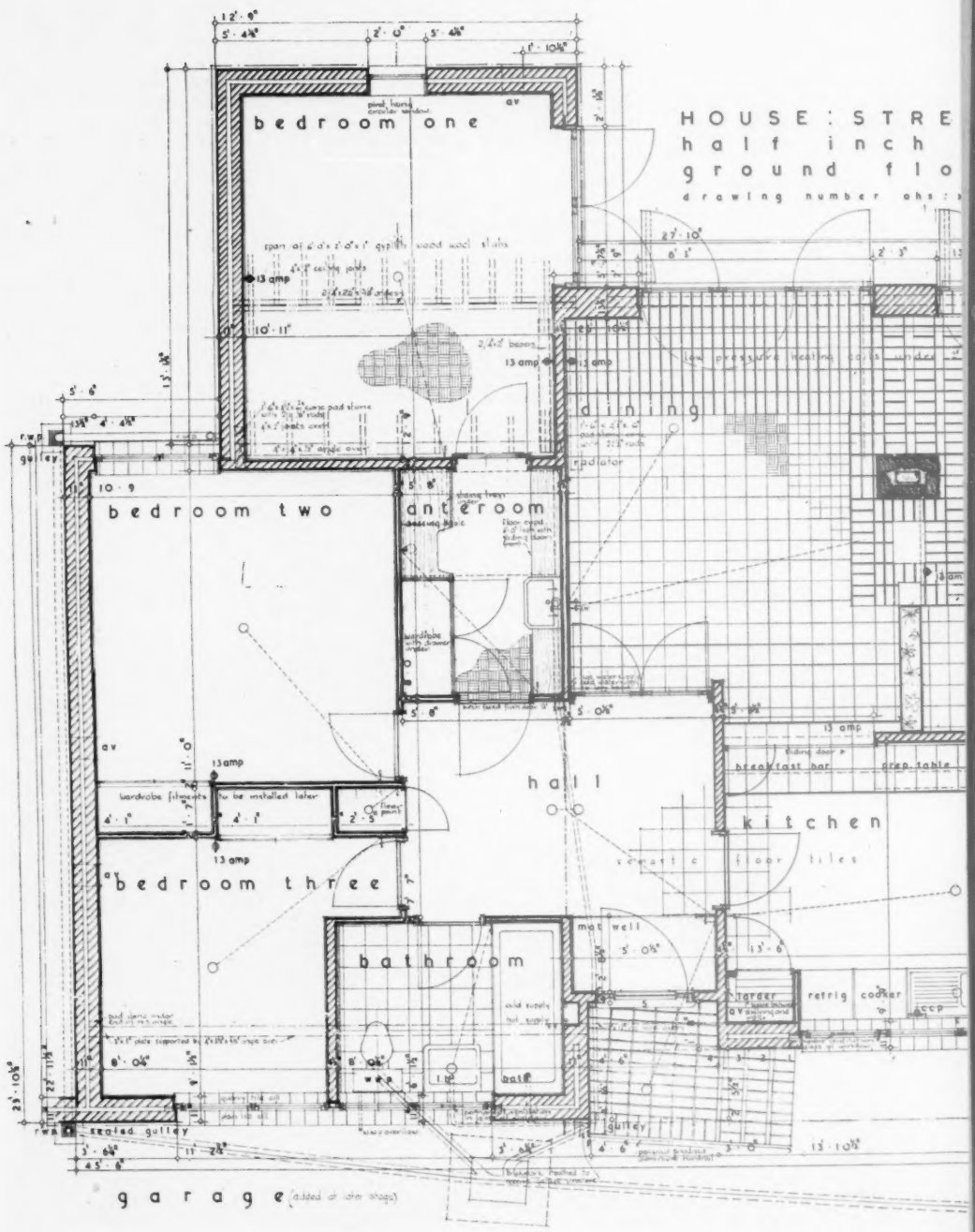
The house cost £2,497 and the garage £175.

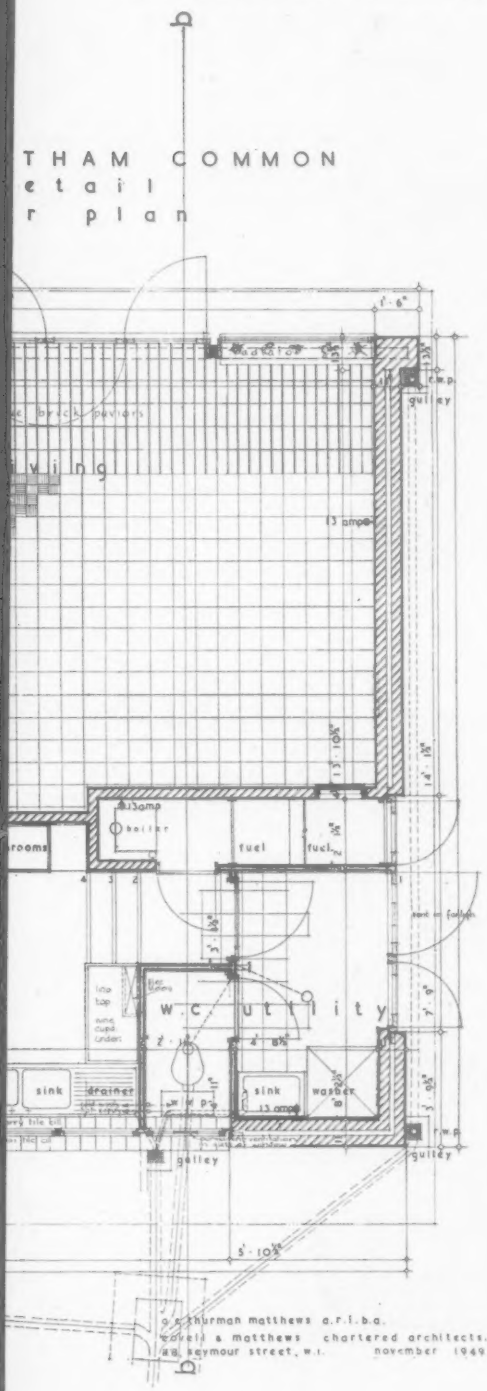
GENERAL CONTRACTOR *J. CONNOLLY*

Subcontractors

Asphalte Roofing : Limmer & Trinidad Lake Asphalte Co. Ltd. *Bricks* : Sussex & Dorking Brick Co. Ltd. *Cement Cold Glaze* : Robb's Cement Enamel Finishes Ltd. *Copper Roof* : Fredk. Braby & Co. Ltd. *Electrical Installation* : London Electricity Board. *Firegrate, Tray and Damper* : A. E. Cooper & Co. *Gas Installation* : South Eastern Gas Board. *Heating and Hot Water Installation* : Rosser & Russell Ltd. *Ironmongery* : Rennis Ltd., Tomo Trading Co. Ltd. *Kitchen Fitments* : H. Newsum Sons & Co. Ltd. *Partition Blocks* : Broad & Co. Ltd. *Paint* : General Iron Foundry Co. Ltd. *Semastic Floor Tiles* : Limmer & Trinidad Lake Asphalte Co. Ltd. *Sanitary Fittings* : General Iron Foundry Co. Ltd. *Woodwool Slabs* : Gyproc Products Ltd. *Wood Block Flooring* : Windsor Floor Co. Ltd.

The front entrance and garage added at a later stage.

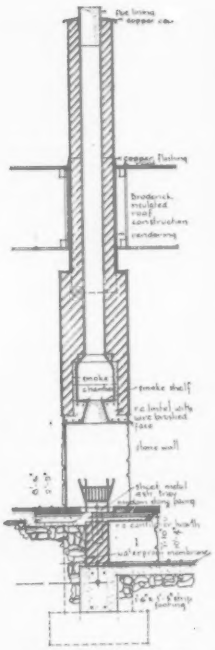

HOUSE : STRE
half inch
ground flo
drawing number ohs :
bedroom one
bedroom two
bedroom three
anteroom
dining
hall
kitchen
bathroom
garage (added at later stage)
13 amp
low pressure heating
radiator
breakfast bar
prep. table
floor tiles
mat well
fridge
retrig
cooker
gutter
seated gutter
wardrobe fitments
to be installed later



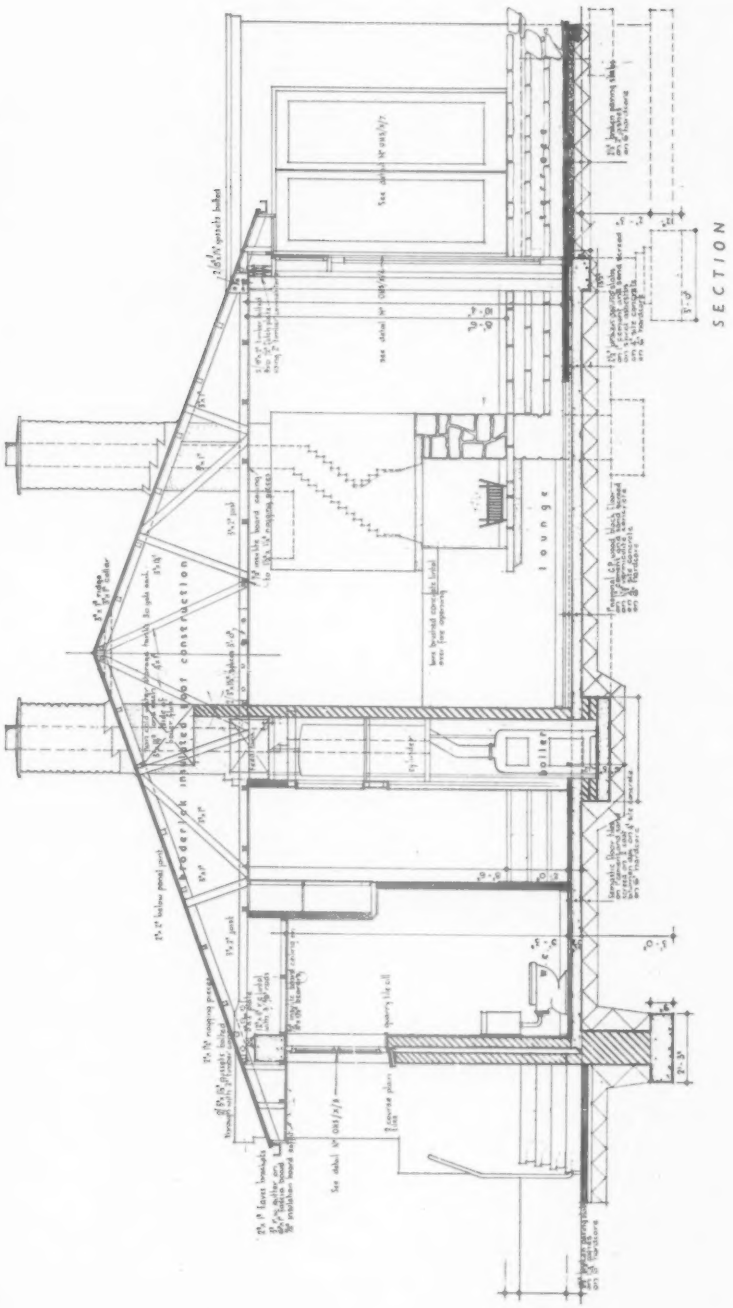
Kitchen fittings.

Part of the living room.

The breakfast bar from the dining side. Below, the open-hearthed fireplace which with the steps, divides one large room into living and dining areas.

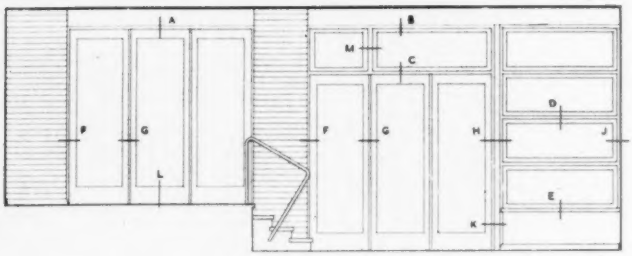


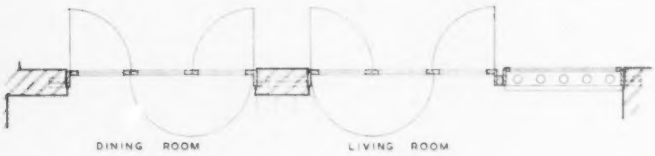
SECTION THRU FIREPLACE

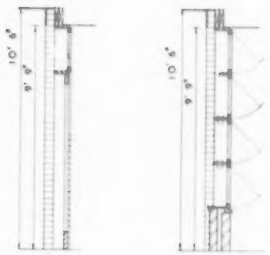


HOUSE AT STREATHAM COMMON SOUTH

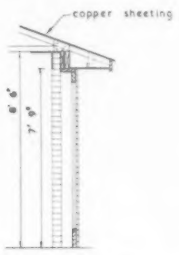
architect: A. E. THURMAN MATTHEWS, A.R.I.B.A.
Covell & Matthews



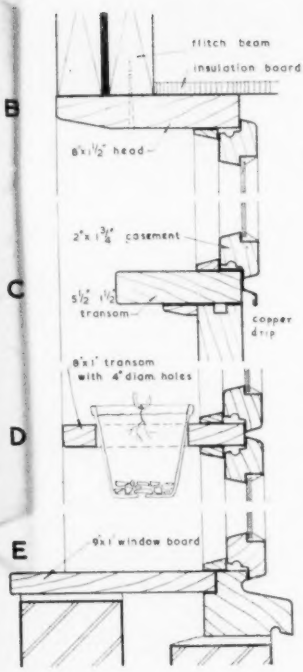


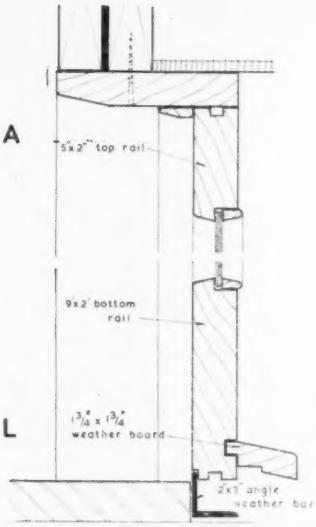


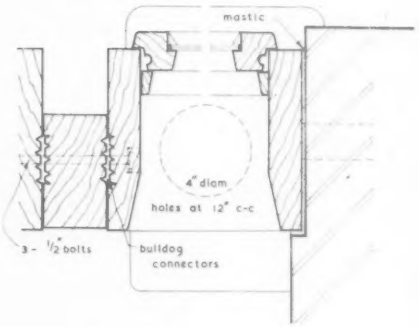
SECTIONS THROUGH
LIVING ROOM DOOR & SIDE WINDOW



SECTION THROUGH
DINING ROOM DOOR



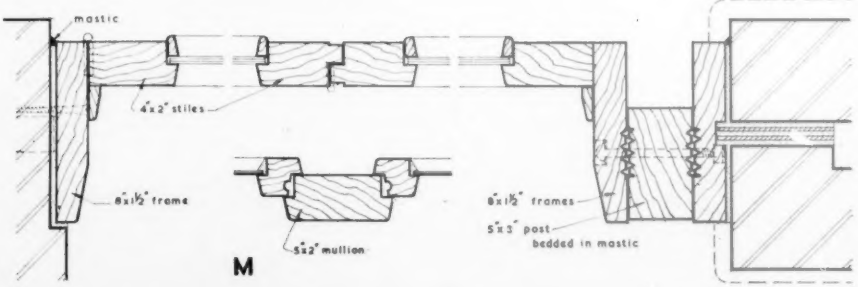


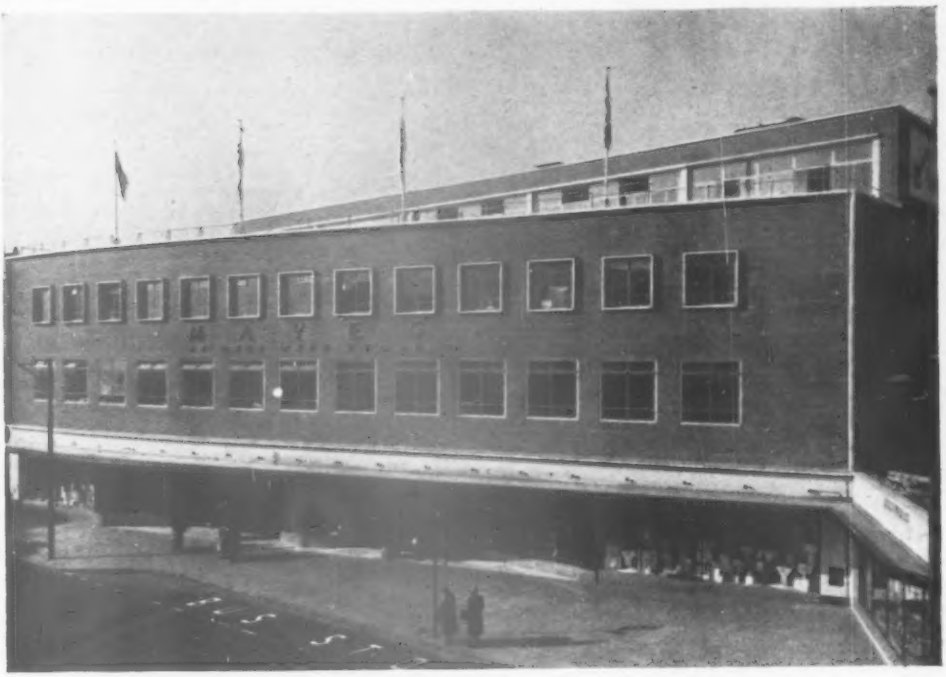


House at Streatham Common South

F G K

Window and Door Details





The main front facing the High Street. Multi-coloured facing bricks are used for the infilling outer panels and windows have stone surrounds.

NEW DEPARTMENT STORE, SOUTHAMPTON

the architects responsible for the design of the structure were Messrs. GUTTERIDGE & GUTTERIDGE, and for the interior design Messrs. TRIPE & WAKEHAM.

THE new store, which is one of the Owen Owen Group, is built on the original site where the first Mr. Mayes started business 125 years ago. In 1940, the store was completely demolished in an air raid. In November, 1950, ten years after the first sketches were produced, the new store, worth over £450,000 and capable of accommodating a staff of 800, was officially opened by the Mayor of Southampton.

In the reconstruction of the building the various sections had to be completed according to a pre-arranged schedule, whilst the client was able to carry on "business as usual."

The framework of the main building is of structural steel with solid reinforced concrete floors and concrete beam and stanchion casings. In the North West corner load bearing brickwork is used.

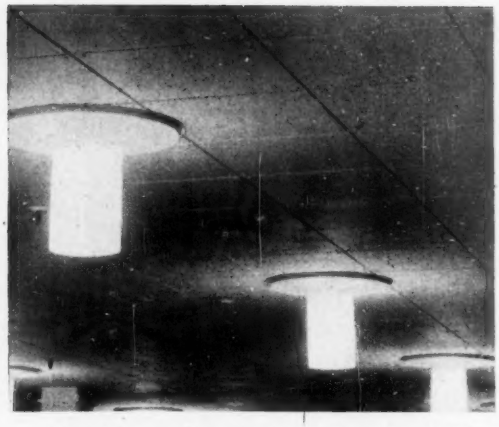
The shop front is mainly composed of bronze frames on blue-grey granite stallboards with backless central windows, one of which has vertical louvres which can be placed to form a solid or open back and, if necessary, any intermediate variations.

The central windows have armour plate glass floors which can be illuminated from below in various combinations of colours besides intensive top illumination through plastic louvres.

Besides the normal gas, hot and cold water and electrical services, a full air conditioning and ventilation plant has been installed for all showrooms with the exception of the second floor. The air conditioning system is coupled with a specially designed refrigeration plant which controls the temperature and humidity all the year round. This plant is claimed to be the only one of its kind installed in this country.

Finishes include gyproc patent plaster to all showroom walls. The majority of these walls were painted with Vitretex compound while the plaster was still wet. Lower ground and ground floor showroom ceilings were constructed of gyproc Plaxstele. The second floor showroom is a dry ceiling of Gyproc plasterboard 2ft square panels with bevelled edges. The panels are removable to provide access to services and wastes from kitchens on the floor above.

Under the system adopted by the general contractor for this job the building owner, after consulting an architect in the usual way, appoints a quantity surveyor, who draws up a bill of quantities and prices it exclusive of profit and overheads. It is upon this estimated cost that the contractor bases his fee, which is adjusted, if necessary, when the surveyor submits his final estimate at the end of the job. By combining these two amounts—the estimated cost and fee—the owner has a figure which should not change



The second floor showroom has a dry ceiling of Gyproc plasterboard 2ft square panels with bevelled edges. The panels are removable to provide access to services and wastes from kitchens on the floor above.

Every column in the shop has four light points and one credit sanction point. On the lower ground and ground floors each column has a fibrous plaster casing with a square veneered base which can be rotated through 360 degrees. This gives maximum elasticity in counter layout as counters can be set at any angle to the columns, see detail page 746. The view below shows the ground floor.

appreciably unless there are drastic additions to the building or marked variations in the cost of materials and labour.

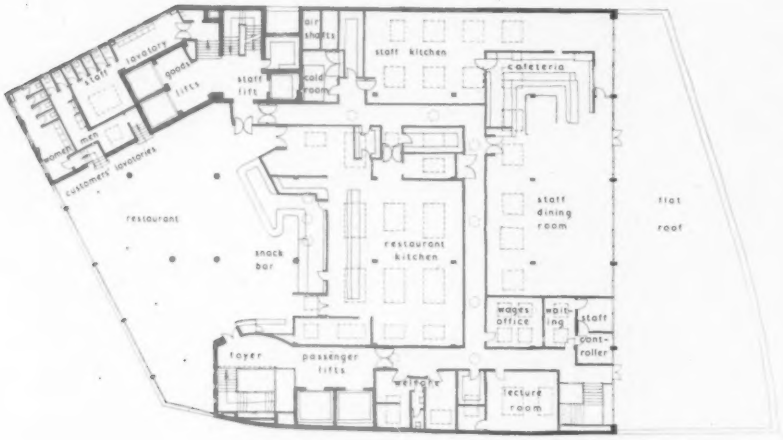
At the completion of the contract the quantity surveyor adjusts his original estimate, allowing for any omissions and additions, and produces a final valuation which is his considered opinion of what the building owner should have to pay when the prime cost is finally submitted.

When all the bills and financial statements have been received the owner pays the prime cost less trade and cash discounts accorded to the general contractor.

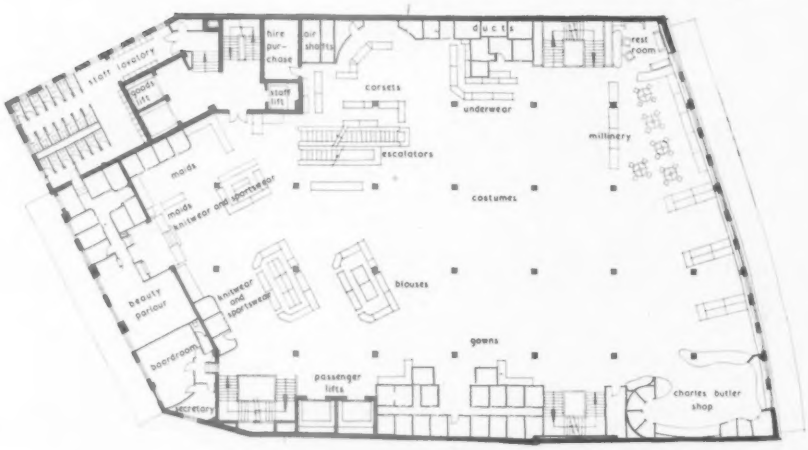
Quantity Surveyors
Lemon & Blizard

GENERAL CONTRACTORS: BOVIS, LTD.

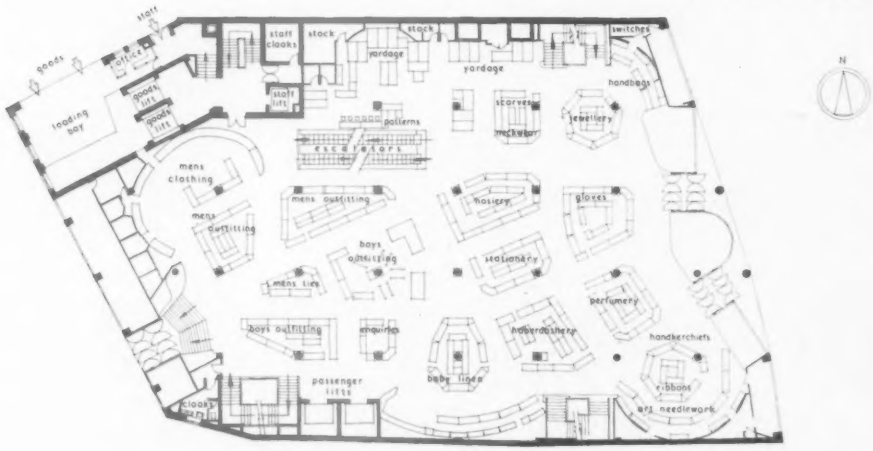
Air Conditioning and Ventilation Equipment: Andrew Machine Construction Co. Ltd. *Asphalting Tanking and Roofing Work:* Ragusa Asphalte Paving Co. Ltd. *Beauty Parlour Construction and Equipment:* Henry Serventi Ltd. *Counters, Fittings, etc.:* George Parnall & Co. Ltd. *Decorative Floors:* Korkoid Decorative Floors. *Electric Light and Power Installation:* W. J. Furse & Co. Ltd. *False Ceilings* (lower ground, ground and second floor): Gyproc Products Ltd. *Handrailing:* Potter Rax Ltd. *Heating and Hot Water system:* Young Austen & Young Ltd. *Installation of Sprinkler System:* The Atlas Sprinkler Co. *Lantern Lights:* Henry Hope & Sons Ltd. *Lifts and Escalators:* J. & E. Hall Ltd. *Plumbing:* Proops & Partners Ltd. *Refrigeration Plant:* Andrew Machine Construction Co. Ltd. *Reinforced Concrete Floors:* Phillips Floors Ltd. *Shop Fronts:* E. Pollard & Co. Ltd. *Structural Steelwork:* Smith Walker Ltd. *Terrazzo Work:* Arcanum Terrazzo & Stone Co. Ltd. *Windows—Metal:* Henry Hope & Sons Ltd.



3rd FLOOR PLAN



1st FLOOR PLAN



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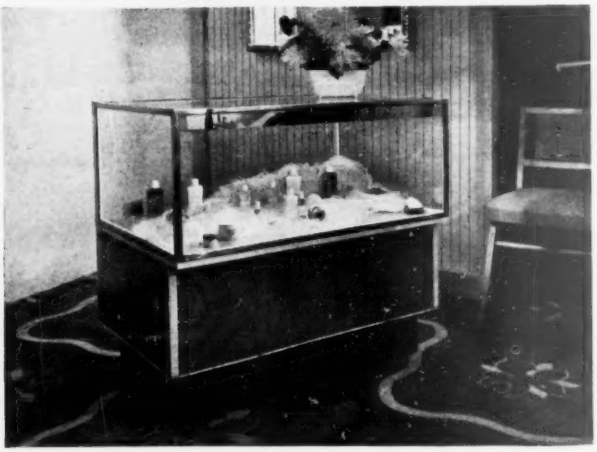
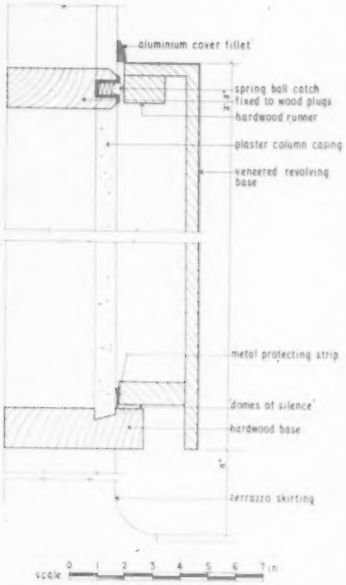
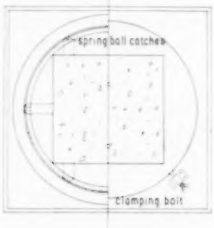
scale 0 10 20 30 40 50 60 70 in feet

GROUND FLOOR PLAN







Reading from top these showcases are from paper pattern department, china department and the entrance to the hair-dressing department.

Details of the rotating column base.

NEW DEPARTMENT STORE, SOUTHAMPTON

FROM MAYFAIR

Calder House, London, W.1. Decorated with Cementone No. 7

TO

MELBOURNE

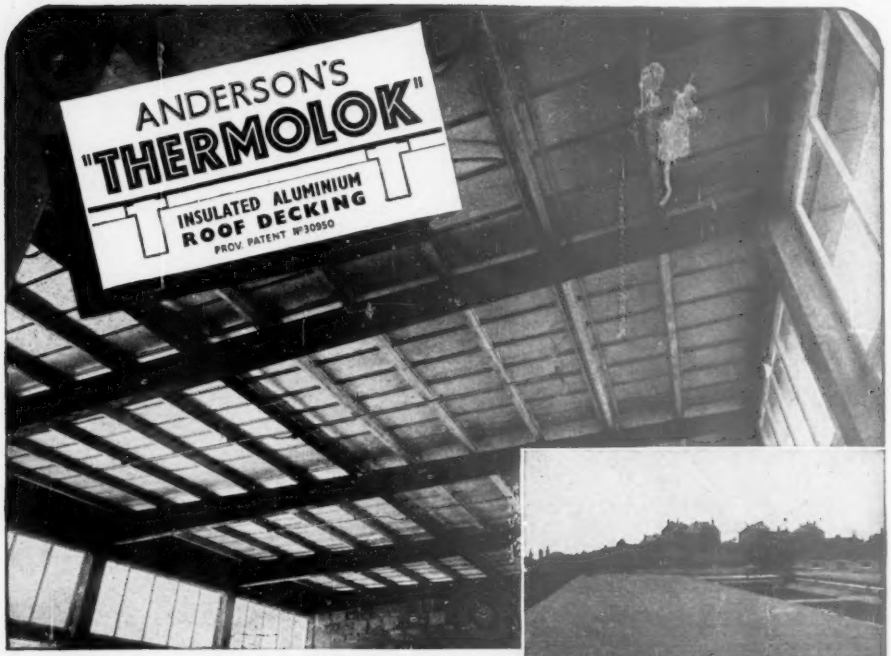
Military Hospital, Heidelberg, Melbourne, Victoria. Cementone No.1 Colours used in renderings, floors, etc.

IN the Arctic Circle or the Tropics, in Europe or in Asia, in North America or South America — you will find a CEMENTONE Job.

The result obtained with Cementone decorative and protective products in these varying climatic conditions is your safety margin and provides proof that whether it is internal or external work

YOU CAN DEPEND ON Cementone

JOSEPH FREEMAN SONS & CO. LTD., CEMENTONE WORKS, LONDON, S.W.18. VANDYKE 2432 (5 lines)



"THERMOLOK" is a modern aluminium decking of exceptional strength and rigidity, and is suitable for all types of roof structures.

The design is exclusive and embodies features which mark a big advance in roof construction.

The system is flexible and can be adapted to suit special requirements. "THERMOLOK" can be supplied in several gauges, and the bar sections increased to take spans greater than 10 feet.

A high insulation value can be obtained resulting in fuel economy and more comfortable interior conditions; condensation risk is reduced to a minimum.

The interior appearance of "THERMOLOK" with its pleasing design and light aluminium colour eliminates the necessity for a separate ceiling

The light weight and strength of "THERMOLOK" enable economy in design of the sub-structure to be obtained to the maximum extent.

No scaffolding is necessary and a speedy erection is assured. Fastenings are reduced to a minimum by means of the patent locking device.

Durable waterproofing is provided by Anderson's "DUROK" Roofing System, and a variety of finishes can be given, if desired, to secure a pleasing appearance and to harmonize with surroundings.

D. ANDERSON & SON LTD
"THERMOSTEEL" DIVISION
STRETFORD, MANCHESTER
ROACH ROAD, OLD FORD, LONDON E.3
also at
Belfast · Birmingham · Glasgow · Leeds · Nottingham

FLEXIBLE DESIGN · SPEEDY ERECTION · LIGHT WEIGHT · THERMAL INSULATION · GOOD APPEARANCE

News of the BUILDING INDUSTRY

THOUGHT FOR 1952

"I have rarely met an employer who, having once trained apprentices, has not realized what gratification it brings, the satisfaction of watching the young man develop his skill under his care, the loyalty to his master which invariably develops between apprentice and willing master, and . . . the not unimportant realization that as an employer he is discharging a duty to his trade and is putting something into that trade as opposed to what he is taking out."

Dudley F. Cox, President L.M.B.A.

*

THE NEW PRESIDENT of the National Federation of Plastering Contractors for 1952 is Mr. H. Humber, of London. Mr. J. L. Phillips, of Leeds, and Mr. R. A. Atkin, of Cardiff, have been elected Senior and Junior Vice-Presidents, respectively.

The National Federation of Plastering Contractors is affiliated to the National Federation of Building Trades Employers.

*

THE COUNCIL FOR CODES OF PRACTICE FOR BUILDINGS has now issued in final form three new codes. Code 131.101 (1951), "Flues for Domestic Appliances Burning Solid Fuel," deals with flues and chimneys depending for their operation upon natural draught, and includes recommendations regarding chimneys built of brick, stone masonry, cast-in-situ concrete, precast concrete units and hollow block; metal and asbestos-cement flue pipes are also included. Its scope is restricted to flues and chimneys serving appliances with a maximum heat output of 100,000 B.Th.U. per hour where the temperature of the flue gases leaving the appliance does not exceed 850 deg F.

Code 324.202 (1951), "Domestic Electric Water-Heating Installations" is a revision, following comments received, of the draft previously issued. It forms part of the series on the provision of domestic electrical equipment and apparatus, and deals with the design of domestic hot-water systems whether they rely solely on electirc heaters or use electric heaters in conjunction with fuel-fired boilers.

Great emphasis has been laid throughout on the importance of heat conservation and on the proper relative location of the various comments of hot-water systems using electricity. Advice is given on the necessary consultation at the planning stage and on the choice of materials, appliances and components. Recommendations are given on the design of various types of system, on desirable water temperatures, and on volumes of stored hot water. Sections on inspection and testing and on maintenance are included. Appendices give useful information on factors affecting heat loss and water flow, and on dimensions of water-heaters. Diagrams show typical layouts of water-heating systems using electricity and a method of fitting an immersion heater to a tank.

In Code 327.402, "Staff Location Systems" advice is given on the necessary consultation at the planning stage and on the choice of materials, appliances and components. Recommendations are given on the design of various types of system, on methods of wiring, and on power supply. Provision of the necessary structural accommodation for the equipment and wiring is also dealt with. Sections on inspection and testing and on maintenance are included. Appendices deal with the segregation of services and with certain special types of cables.

Copies of these codes may be obtained from the British Standards Institution, 24/48, Victoria Street, London, S.W.1.

*

LAFARGE ALUMINOUS CEMENT CO., LTD., held their 16th annual "Fondu" luncheon to London merchants on December 5. Mr. J. G. Kay, chairman, presided, supported by Mr. P. Harris, the managing director.

Among the guests present from overseas were M. Charles Daher, M. Paul Lafeuille, M. A. de Jerphanion and M. Paul Daher.

Mr. G. C. Heikes (E.C.A.), U.S.A. Embassy, was present. The overseas agent of the Lafarge Company in Nairobi, Mr. J. C. Mackinnon, of Messrs. R. H. Paige & Co., and Mr. E. Baker, representing the "Fondu" Australian agents, Messrs. George Wills and Sons, Ltd., also attended.

*

PRESTRESSED CONCRETE is the subject of 12 weekly lectures and demonstrations which begin on January 9, 1952, at 6.30 p.m. at the L.C.C. Brixton School of Building.

Applicants for the course should be of graduate standard in Theory of Structures and should be experienced in concrete design. Further particulars may be had from the Secretary, Brixton School of Building, Ferndale Road, S.W.4.

*

THE BUILDING APPRENTICESHIP and Training Council has made awards to 524 apprentices in training for outstanding ability in class and site work during the year.

THE FESTIVE TOUCH

This is not a Christmas Card. But the festive spirit has been caught by Hoffnung in this mural, one of two prepared for Duresco Products Ltd., and exhibited on their stand at the Building Exhibition.

THE SPIRAL TUBE & COMPONENTS COMPANY, LTD., of Osmaston Park Road, Derby, announce their new telephone number which is Derby 48761.

*

ALL SOFTWOOD BUYING overseas will be done by private traders from January 1, 1952.

After that date, the import of softwood by private traders will be permitted from all sources within a "global" limit. Timber Control will take delivery of the balance of its existing contracts, but will not place any more.

The total imports in 1952 will be limited to an amount necessary to maintain the present rate of consumption and to provide necessary commercial stocks. The amount of sawn softwood expected to be imported privately during the year is estimated on this basis to be about 600,000 standards. Import licences for an initial total quantity of 350,000 standards will be issued as soon as possible. Licences will be given to persons or firms in proportion to the quantity of softwood which they have purchased under this year's arrangements.

The strategic reserve of timber so far accumulated will not be disposed of without consulting the trade.

The present Regulations regarding the acquisition and consumption of softwood will continue in force, but as from January 1, 1952, consumption licences will be issued every six months instead of every quarter. The Minister of Materials has personally informed the Softwood De-Control Committee of the Timber Trade Federation that this is not to be construed as a relaxation of the softwood licensing system which will continue to be strictly enforced.

GOOD, BAD OR INDIFFERENT ?

No. 59.—By A. FOREMAN

More External Rendering

I WAS recently associated with the repair and repainting of an early Victorian house which was stucco faced. It had been kept well and regularly painted until the war but during the war period the painting was discontinued with the result that considerable damage had taken place by the spring of last year. I do not know with any certainty exactly what the rendering material was but I believe it was some type of Roman cement; it appeared to have some indications of being rather a limey based material and seemed to be about fifty per cent sand. Some parts of the stucco were badly cracked and there were also some loose and even fallen areas. The paint surface showed serious cracking in some places.

We first stripped off the really bad patches of stucco back to the brickwork and found this to be in reasonably good condition. We also stripped off all the really badly cracked paintwork which was a very slow and tedious process and again cut out the worst of the cracks in the stucco on the areas stripped of paint. The edges of the stucco which was undisturbed were carefully undercut. The brickwork patches stripped of stucco were first given a "spatter-dash" coat of Portland cement and sand in the proportion of 1 to 2½ in a rather liquid form to try to ensure a good key for the new rendering to the brickwork. All bad cracks in the stucco which was not removed were cut out very wide and, as far as possible the edges were again undercut and the whole of the opened up surface coated with a slurry similar to the spatter-dash coat, only rather more liquid. After the application of the slurry the whole surface of the walls was then thoroughly washed down, whether paintwork, stripped stucco or brickwork, the rough surfaces of paintwork were wire-brushed and the whole hosed down to remove all dirt and dust. After this treatment we rendered the brickwork and made good the cut-out cracks with a mix of cement, hydrated lime and very carefully graded coarse sand in the proportion of one of cement, one of lime and eight of sand and left it to dry out for two weeks. After this time there were very fine cracks at some of the junctions with the old stucco but none were so open that they could not be covered easily by the painters.

The whole surface was then primed with an alkali-resistant paint: this priming was followed by two undercoats of a white-lead based paint and followed with a finishing coat of white-lead oil gloss paint. I have recently inspected the work and it seems in very good condition and a credit to the men who took real trouble to make a good job.

I think there has to be an element of gambling when carrying out these repairs to external stucco as it is very difficult to know exactly what the original stucco material might have been, but I am fairly confident that a cement-lime-sand mix applied as described above, can be used for repairs with reasonable safety unless the stucco is of the oil mastic type, which can usually be identified by its effect on the brickwork behind it; with this type I am told, although I have no experience, much more work is needed to prepare the brickwork as the bricks are impregnated with oil and therefore provide a very bad key.

Experience points to the fact that the repainting of oil mastic stucco needs great care in the selection of the materials to be applied, quite apart from the need for exceptional care in preparation; the only safe and therefore wise action is to call in a very reputable paint manufacturer and take the advice he gives on both materials and workmanship; if anything then goes wrong there is at least someone to blame!

Those who have to do repairs to old stucco will find it well worth consulting the Building Research Station where this problem has received very special attention over a long period. The B.R.S. has accumulated much experience as the result of watching the results of work carried out following their advice. I am sure that the advice of the station will be found to be much more helpful than any information which may be derived from old textbooks on building technique as this is usually based on much less scientific examination of the problem.

FIRE PROTECTION

The Architect's Responsibility

Extracts from a lecture delivered by

ERIC BIRD, M.B.E., M.C., A.R.I.B.A.

at the R.I.B.A. on November 27

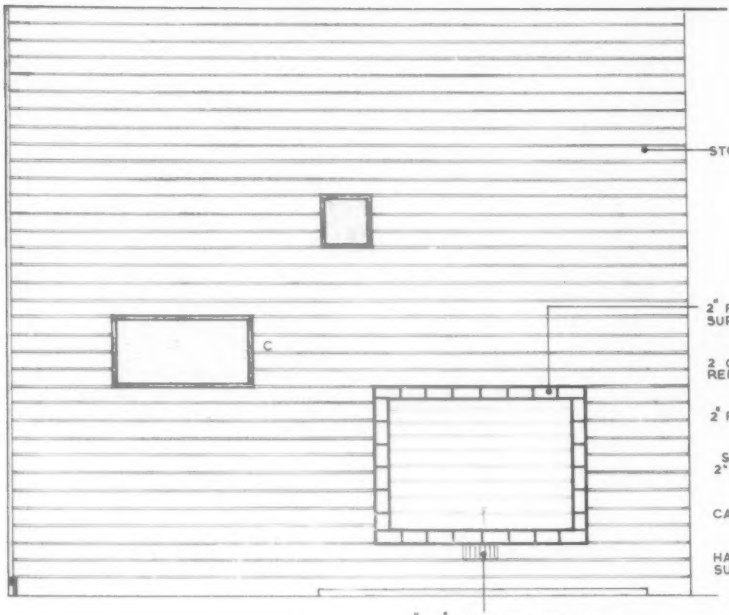
IN 1935 the Fire Offices' Committee opened their Fire Testing Station at Elstree, following the publication of British Standard Definitions for Fire Resistance, etc., in 1932.* These two events started truly scientific fire research in this country; previously it had been largely empirical in character. For the first time full scale elements of structure—columns, beams, walls and floors—were submitted to a standard fire test. The Station was financed and operated by the F.O.C. though the staff of the Building Research Station were permitted to use it. During the last war the activities of fire defence and fire raising gave great impetus to research, and in 1946 the Government and the F.O.C. together reorganized the whole work under the control of two bodies.

The first of these two bodies is the Joint Fire Research Organization of the Department of Scientific and Industrial Research and the Fire Offices' Committee, now commonly known as the J.F.R.O., initials which should be as well known to architects as are B.R.S. The Fire Offices' Committee presented their testing station at Elstree to the new organization, and new buildings are now being provided there. The J.F.R.O. is unique in being a joint concern of Government—the D.S.I.R.—and industry—the F.O.C. At the same time the latter established the Fire Protection Association as an independent body to study fire technology generally and to give advice. Thus the whole subject is now in the hands of two organizations which work in close co-operation with one another.

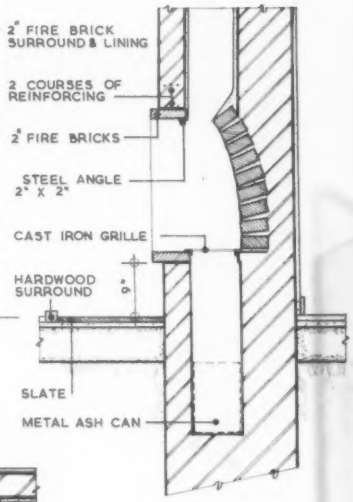
I think it is not unfair to say that the architectural profession to-day does not take the interest in the fundamentals of fire protection that it did in the days of the British Fire Prevention Committee. Architects generally seem content to apply existing regulations though they frequently grumble at them. The subject receives perfunctory treatment in the schools of architecture and in the R.I.B.A. examinations. Admittedly, the leading local authorities, such as the L.C.C., do provide the public, through their regulations, with a reasonable standard of personal safety and they not infrequently require the employment of fire-resisting construction to limit the spread of a fire and consequently the damage it can cause. But regulations are rigid and tend to become out of date; moreover under many of the smaller urban authorities they are often imperfect and occasionally non-existent. However, whether controlled by regulations or not, most architects follow good practice in construction and the planning of means of escape, on lines such as those laid down by the L.C.C. But I think they need a better understanding of basic principles and a knowledge of research findings to obtain that element of reasonableness which most building regulations in this country require. So equipped they can argue with the local authority official on his own ground, they can avoid the risks which one sometimes sees incurred with new materials and forms of construction, and most important of all, they can make a positive contribution to advance in fire protection technique. The architect has one great advantage in this last respect; he is trained to see all round a problem and to incorporate the ideas of the specialist into a workable, economic building. Fire protection is only one of the factors to be considered in a building project. All specialists are liable to be extremists, and where an architect can argue a point from first principles and in relation to the other factors to be considered in a design there is most likely to be general all-round progress. Most architects can speak from first principles on matters of planning, stability of structures, lighting, sanitation and acoustics, but very few on fire protection.

The architectural profession, and especially teachers of architecture, will doubtless view with aversion the growth of yet another technique affecting building and demanding a place in an overcrowded

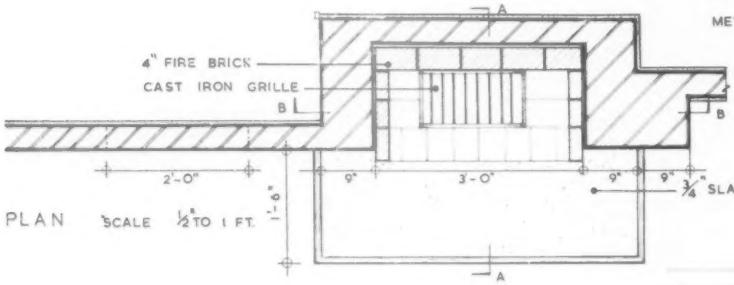
* British Standard 476, 1932. British Standard Definitions for Fire-resistance. Incombustibility and Non-inflammability of Building Materials and Structures with Addendum, July 1945, on "Surface spread of flame."



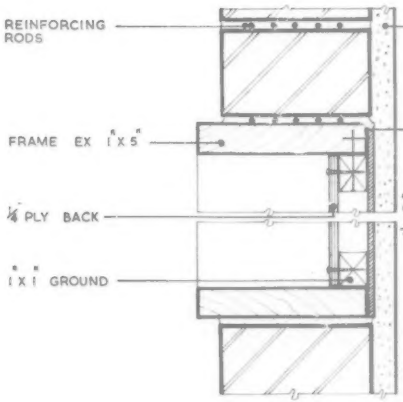
ELEVATION



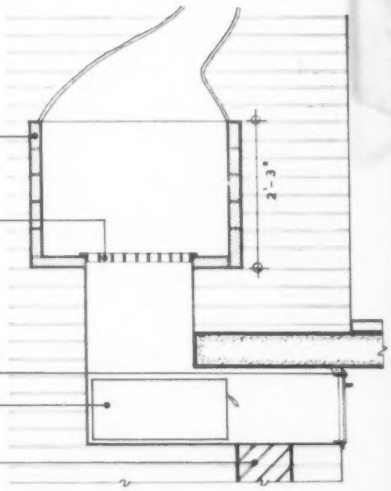
SECTION A-A



PLAN SCALE ½" TO 1 FT.



¼ F.S. DETAILED SECTION AT "C"



SECTION B-B

FIREPLACE DETAIL, HOUSE AT HIGHGATE
ARCHITECT: JUNE PARK

curriculum of training, but fire protection remains a problem of national importance to the solution of which architects are specially qualified to contribute.

Defence against Fire

The community protects itself against the fire menace in three principal ways. It pays insurance premiums; it maintains brigades of highly trained professional fire fighters; it controls construction and planning.

The Fire Testing of Structural Elements

Turning now to that part of the subject which more directly concerns architects, we come to the work which has been done at Elstree since 1935. It was to ascertain precisely the fire resistance of elements of structure that the Fire Testing Station was established. It was first desired to know the degree of resistance to fire of common elements of structure such as 9in, 11in, or 4½in walls, the ordinary joisted floor, reinforced concrete floors, etc. Many other tests have followed since.

A first step in this study was a definition of terminology and the determination of what constituted an average fire and how such a fire could be simulated in a standard or repeatable manner. Against such a standard fire, structural elements could be tested and compared with one another. This was done in the inter-war period by a committee of the British Standards Institution, on which the R.I.B.A. was represented, which produced *British Standard Definitions No.* 476. This document is the essential basis of all fire testing in Great Britain. Its principal feature is the "time-temperature curve" which defines a theoretical fire in terms of a growth of temperature in time. The curve was built up from certain temperatures recorded or deduced in actual fires.

The next step was to build suitable furnaces with accurate controlling mechanism so that the temperatures could be created in them following precisely the times of the standard curve. Also it had been realized many years earlier that elements of structure themselves should be tested and not the individual materials of which they are composed; moreover this could only be done with any degree of certainty at full scale. Consequently the furnaces had to be large. Three furnaces were therefore built at the Elstree Fire Testing Station, one for columns, one for walls, partitions and doors, and one for floors and beams. The furnaces are gas fired and electrically controlled. This gives the high degree of accuracy which is necessary if various elements are to be compared with one another and according to the standard curve. The B.S. 476 test also prescribes certain loading and water tests which it is not necessary to detail here.

The result of a test is stated in terms of time, namely, how long a given element of structure will withstand without physical failure or the transmission of heat (beyond a prescribed degree) the steady build-up of the standard fire in the furnace and continue to perform its designed function. Elements of structure that have been tested are therefore graded in *hours* according to their performance. B.S.D. 476 lays down the following grades: Grade A, 6 hours; Grade B, 4 hours; Grade C, 2 hours; Grade D, 1 hour, and Grade E, ½ hour. The practical uses of these gradings will be discussed later.

It will be realized that this work, apart from wartime interruption, has of necessity been slow. Nevertheless, a large body of results has been built up covering most of the elements of structure in common use. A comprehensive report on results is to be published shortly by the Stationery Office under the title of *Fire Tests on Structural Elements*. A condensation of results is given in *Post-War Building Studies No.* 20. *Fire Grading of Buildings, Part I*, and in Pamphlet No. 5, *Fire Resistance Grading of Elements of Structure*, published by the Fire Protection Association.

Some Typical Examples of Fire Resistance of Structural Elements

The following very generalized notes will give an impression of the relative fire behaviour of ordinary structural elements. *Walls*. 9in and 11in brick walls in bricks of clay, sand-lime or concrete are Grade A. A 4½in wall, plastered on both sides, is Grade D. Partition block walls varying in thickness from 4in to 2in and of different classes of aggregate range from Grade C to Grade E. Solid wood-wool slab partitions, 2in thick and plastered both sides are Grade D.

Floors. The ordinary 9in by 2in joisted floor with ⅞in t. and g. boarding and lath and plaster ceiling is Grade E. The resistance of the solid rod-reinforced concrete floor depends partly on the thickness of cover to the steel, but mainly on the overall thickness. A properly constructed 3½in thick r.c. floor reached Grade E, a 5in floor is Grade C, and a 7in floor Grade A.

Columns. The 8in by 6in R.S. stanchion without protection failed in 11 minutes. A protection of 4½in brickwork, with web spaces filled, raised it to Grade A. The normal 2½in r.c. protection (1 : 2 : 4 mix and Class I aggregates) gave Grade B; a similar protection 1½in thick gave Grade C. A protection of plaster 1in thick on expanded metal lathing gave Grade D.

It will be seen that this research work has made possible the design of structures possessing specific predetermined fire performances. The next step was to determine the maximum heating to which structural elements are likely to be subjected in various classes of building. This brings us to the question of the amount of combustible material likely to exist in each class of building and the maximum fire severity that will be generated by its burning.

The Fuel of a Building Fire—The Fire Load

It is commonly said that a building burns whereas truly a building fire has two fuel components, namely, the combustible substances in the contents and any combustible parts of the structure of the building itself. The fuel content arising from the occupancy may be, and usually is, of much the greater importance. The substances comprising most occupancies are commonly both easier to ignite and contain a greater bulk of combustible material than do the more usual forms of structure, though there are, of course, exceptions. Therefore in determining the degree of fire resistance of a given building at the design stage, the use to which that building is to be put is of first importance.

All the occupancies commonly met with have been studied and classified. They are classified in two ways, namely, according to the ease with which they can become ignited and according to the amount of heat their burning will produce. Those that are most easily ignitable are termed "abnormal," by which is meant that a fire originating in them can grow at abnormal speed. Abnormal occupancies present special problems in regard to extinction and speed of escape. A list of abnormal materials and occupancies is given in *Post-War Building Studies No.* 20 (Appendices I and II).

The potential evolution of heat in a building fire is termed "the fire load." It is computed by measuring the weights (in lb) of the combustible materials, multiplying them by the calorific values (in British Thermal Units) and dividing the floor area (in sq ft). Average fire loads have been worked out for the majority of common occupancies, as in Table I, which gives some typical ones. More information is given in *Post-War Building Studies No.* 20, p. 17, where the broad classification into "Low Fire Load," "Moderate Fire Load" and "High Fire Load" is adopted.

TABLE I.

Occupancy	*B.Th.U. per sq. ft.*
Hospital ward ...	8,000 or less
Residential ...	27,200
School classrooms ...	29,600
Office occupancy (with light files)...	58,400
Library	200,800
Heavy file store ...	332,000
Textile factory ...	200,000
Textile warehouse...	500,000
Book store (filled)...	2,000,000
Rubber warehouse	2,000,000 and more

The Use of Fire Resisting Construction

The research work which I have briefly outlined makes possible the provision of structural elements which are known to resist the burning out of the contents. The basic purpose is economy in building costs. For example, there is no need to protect the steelwork of a block of flats with 1½in of reinforced concrete because this gives Grade C protection, whereas the calorific value and weight of the contents demand no more than a Grade D protection, which can be obtained with plaster on metal lathing. On the other hand the contents of a warehouse may demand Grade B or even Grade A, in which case a protection of 1½in of reinforced concrete to steelwork will be inadequate and the building may be totally destroyed with all its contents. Some redesigning of floors and added protection to columns could achieve the appropriate higher grade at relatively small cost.

The proper use of fire-resisting construction is to confine the fire and prevent it spreading throughout the building or to adjacent buildings. Therefore, fire-resisting elements of construction should be used to form compartments which are fire-tight as far as is practicable. This means that compartment walls, floors and supports in a fire-resisting building should have the same minimum grade of fire resistance. Also, staircases, lift shafts, ducts and doorways between compartments should be protected with appropriate fire doors to prevent the spread of fire by what is termed "flue-effect" through them. There is no special virtue in construction that will not transmit or withstand fire if it is not used to form compartments. Some of the most disastrous fires have occurred in fire-resisting buildings where doorways, staircases and lift shafts were not properly cut off. Compartmenting is an essential in the huge modern building of to-day.

Architects practising in London will be well aware of the way in which these principles are applied by the London County Council. The L.C.C. require a compartment to be not larger than 250,000 cu ft, and they specify with precision the means whereby doors and lift shafts are cut off as well as the construction to be used to form compartments. Lack of adequate precautions against the "flue effect" in large buildings—the spreading

of smoke and hot gases up the stair wells and lift shafts—is, in my opinion, one of the most serious defects in present-day planning, though not, of course, in the area controlled by the L.C.C. In the provinces I have noted frequently the absence of proper cut-off doors at the main staircases of multi-storey hotels and office buildings. It is not enough to cut off only the escape staircases, as is frequently done, because flue effect up the well of an unenclosed main stair or lift shaft can fill upper corridors with smoke or hot gases so that the occupants of rooms may be unable to reach the escape staircases.

It is debatable how far the installation of a sprinkler system reduces the need for compartmenting. Most authorities agree that compartments can be made materially larger, though readers of *Post-War Building Studies No.* 20 will observe that there is a minority report on this point. Some large industrial buildings cannot conveniently be compartmented at all in their main interiors. Here the best course is to install a sprinkler system. All buildings having abnormal occupancies, that is to say those which are subject to very rapid growth of fire, should be sprinklered.

The Spread of Flame Test

During the last war there was added to B.S.D. 476 a test for assessing the rate of flame spread across the surface of materials. This addition was made necessary by the growing tendency to use as linings to buildings (i.e., as substitutes for plaster) various sheet materials, the fire properties of which were imperfectly appreciated. A series of disastrous fires, where the lining material was observed to spread flame very rapidly, brought this matter into prominence. The test classifies materials into four groups: Class 1, *Surfaces of Very Low Flame Spread;* Class 2, *Surfaces of Low Flame Spread;* Class 3, *Surfaces of Medium Flame Spread;* Class 4, *Surfaces of Rapid Flame Spread.*

Sheet materials obviously meet a demand for wall and ceiling linings that are less costly and more rapidly fixed than ordinary plaster and, in some cases, provide a better degree of thermal insulation. But architects should pay attention to the possible grave increase of fire risk through a widespread use of those in Classes 3 and 4. *Post-War Building Studies No.* 20 discusses these materials and the problems they introduce, specially with reference to their influence on ease of escape.

Fire Grading of Buildings

The Fire Grading of Buildings Committee, which was set up jointly by the Building Research Board and the Fire Offices' Committee, produced in 1946 a report which I have mentioned several times previously, *Post-War Building Studies No.* 20. This report takes all the work I have outlined to its logical conclusion, namely, the classification of building types according to their fire hazards and the specification of appropriate grades of construction for each. I do not propose to summarize this report, but to leave it to those who have the enterprise to read it.

There is one point, however, that should be mentioned. Fire Grading postulates the restriction of user to certain classes of construction. Up to the present most local authorities, such as the L.C.C., have required one (or two) types of fire-resisting structure of high grade because they could not control change of occupancy. They have had no power to prevent, say, a block of flats being used for other purposes. With the much closer control of building now being exercised through town planning, this kind of uncontrolled change of user is beginning to disappear and the way is becoming open for the proper application of fire grading. Already one can say that the chance of a local authority owned block of flats being turned over to another use is virtually nil.

The Fire Grading of Buildings Committee also agreed that British building structures could be classified into seven types in terms of fire-resistance. Types 1, 2 and 3 are fully fire-resisting (or "protected" to use the Committee's term) for 4, 2 and 1 hours respectively, and are desirable for buildings with high, moderate and low fire loads. Type 4 has ½-hour resistance, and is in effect what is termed "traditional" construction. Type 5 is the same external construction, but inferior inside. Type 6 is the steel framed and sheeted industrial structure which is incombustible but non fire-resisting. Type 7 is the wholly combustible building.

Recognition of this classification and its adoption by designers is still in the future. Meanwhile, the classification has certain obvious advantages: it provides architects with guidance as to the type of construction that should be used to house a given occupancy; it should enable local authorities to determine the general constructions they will or will not sanction in various kinds of urban area: it should help to ensure that a given building has consistent fire resistance throughout and is not fatally weak in one feature. At the same time, because it sets standards of performance, it does not impede the architect's choice of materials nor his freedom in design.

The Dwelling House

The effect of recent changes in the construction of small buildings, including those employing prefabricated methods, requires consideration. The dwelling house is, of course, the outstanding example, though these methods are used for other buildings, notably schools. The traditional house of brick or stone, tile or slate, joisted and boarded floors and plastered walls and ceilings has a fire performance that is fairly good and gives reasonable time in which occupants can escape or be rescued. For the normal two-storey dwelling, I see no reason why a higher standard should be demanded. But any constructional changes which might result in a lower standard require careful study.

The J.F.R.O. maintain a nation-wide statistical service covering all aspects of fires. A study of the incidence of fires in post-war houses has revealed that there have been proportionately four times as many serious fires in permanent non-traditional houses (of all types) as in traditional houses: in other words, the prefab. has been, so far and on the average, four times as fire-hazardous as the traditional house. There is, however, no need for the occupiers of pre-fabs. to panic about this because the relative frequence of outbreak in all types of house built since the war is less than in those built before it. But there have been some rapid and fierce fires in certain types of prefab. with regrettable loss of life.

There seem to be two principal elements in these pre-fab. fires. The first is the use of combustible linings for interior surfacing instead of plaster or plasterboard; some of these linings have been in Class 4 "Rapid Fire Spread." The second is the substitution of a metal flue pipe in a casing for the customary byelaw brickwork flue. There is, of course, no reason why a construction because it is prefabricated should be any more fire-hazardous than a traditional one; in my opinion, the potential fire behaviour of the prefab. designs was insufficiently understood just after the war, although the report of the Burt Committee was clear enough on the point. Variations in the construction of approved designs were sometimes made, with the result that risks were taken in ignorance. It is only fair to say that these risks are becoming recognized by those who are concerned with Government sanctioned designs of prefabs. and are not likely to be taken again. So far as those already built are concerned, remedial measures are being undertaken, though perhaps at considerable expense. Nevertheless, this experience points the moral that departures from accepted methods of construction should not be made, nor should new materials be employed without a careful and fundamental study of the potential changes in fire hazard they may introduce. And it should be pointed out that the Joint Fire Research Organization and the Fire Protection Association exist for the purpose of providing the detailed guidance necessary.

Conflagrations

Finally we come to what is primarily the town planning side of the subject. Throughout historical times towns have been ravaged from time to time by fires which, originating from a single source, have grown into uncontrollable conflagrations and which have resulted in widespread destruction, loss and dislocation of life. Our custom in Britain, since the Great Fire of London in 1666, of building with brick walls and slated or tiled roofs has saved us from the worst of these, such, for example, as those which have ravaged many American townships built with timber walls and roofs of shingles. We have, however, had them in commercial and industrial areas and may do so again, in spite of our efficient fire service, specially in those older, unplanned congeries of factories and warehouses which escaped war damage.

In planning and building new towns and parts of old towns we ought to make sure that the resulting built-up areas are conflagration proof. This is not difficult in normal small house development, provided we avoid the use of combustible roof surfaces on a wide scale. But the tendency to zone for specific uses may result in the creation of conflagration hazards in commercial and industrial areas. In the days before town planning became a controlling force, high fire risk factories and warehouses were not infrequently surrounded by areas of low risk dwellings which tended to isolate the occasional large fire. To-day town planners zone buildings of these kinds into well-defined groups.

Fortunately, in central urban areas, the modern tendency to adopt open planning for reasons of light, air and traffic circulation, together with fire-resisting construction of the necessarily large buildings, helps greatly towards a reduction in the risk of conflagration. Factories, on the other hand, usually have top-lighting and are built close together; moreover, they are generally built with unprotected steel framework which is not fire-resisting, and they frequently house fire-hazardous processes or combustibles in large amounts. There is some danger that conflagration risks may be created in these planned industrial zones, if what experts call the "exposure hazard" is not studied. Much useful work on exposure hazard has been done by B.R.S., and is now in the hands of the J.F.R.O. Information on this matter is also given in *Post-War Building Studies No.* 20.

CONTRACT • NEWS •

Notes below give basic data of contracts open under locality and authority which are in bold type. References indicate: (a) type of work, (b) address for application. Where no town is stated in the address it is the same as the locality given in the heading, (c) deposit, (d) last date for application, (e) last date and time for submission of tenders. Full details of contracts marked ★ are given in the advertisement section.

OPEN

BUILDING

AMPTHILL R.C. (a) 20 houses in 5 blocks, Salford Road site, Aspley Guise. (b) Engineer and Surveyor, Council Offices, 12, Dunstable Street. (c) 2gns. (e) Dec. 31.

* * *

BOOTLE B.C. (a) Reconstruction of 4 large greenhouses, Derby Park. (b) Borough Surveyor, Town Hall. (e) Jan. 7.

* * *

BURTON-ON-TRENT B.C. (a) (Group 1) 4 houses, (Group 2) 15 houses, (Group 3) 12 houses and 6 flats, (Group 4) 4 houses and 8 flats, (Group 5) 20 houses and 4 flats, (Group 6) 6 houses, Manners Estate. (b) Borough Surveyor, Town Hall. (c) 1gn each group. (d) Jan. 8. (e) Jan. 30.

* * *

CHESTER C. & C.C. (a) Conversion into 2 bungalows of the Smallpox Hospital, Bumpers Lane. (b) City Engineer, 43, Northgate Street. (e) Jan. 8.

* * *

DURHAM C.C. (a) Alterations to Penshaw House, Shiney Row, to form a nursery. (b) County Architect, Court Lane. (e) Jan. 8.

* * *

EASTBOURNE B.C. (a) 2 bungalows at Langley Point. (b) Borough Engineer, 2-4, Saffrons Road. (c) 2gns. (d) Dec. 29.

* * *

EAST RIDING C.C. (a) Police house with annexe and office at Stamford Bridge. (b) County Architect, County Hall, Beverley. (c) 2gns. (e) Jan. 10.

* * *

ELLESMERE PORT U.C. (a) 11 precast concrete garages on the Thamesdale Estate and 7 garages on the Overpool Estate. (b) Engineer and Surveyor, Queen Street. (c) 1gn. (e) Jan. 7.

* * *

ELY U.C. (a) 16 flats in 4 blocks at Walsingham Way site. (b) Council's Architect, Urban Council Offices, Lynn Road. (c) 1gn. (e) Jan. 5.

* * *

ELY R.C. (a) (1) 32 houses and 12 bungalows with drainage, etc., and (2) construction of roads, paths, drains, etc., at Common Road, Witchford. (b) Engineer and Surveyor, 11, Lynn Road. (c) 1gn. (e) Dec. 31.

* * *

ENFIELD U.C. (a) 18 houses, Glenbrook South, Enfield. (b) Engineer and Surveyor, 7, Little Park Gardens. (c) 2gns. (d) Jan. 3. (e) Jan. 21.

* * *

FLINTSHIRE C.C. (a) 1 pair of police houses, Llewelyn Street, Shotton. (b) County Architect, Llwynegrin. (c) 2gns. (e) Jan. 8.

* * *

GOSPORT B.C. (a) Reconstruction of 3 greenhouses, 50ft long, 13ft wide, 1 greenhouse 78ft long, 13ft wide and also semi-sunk brick boiler house at Gosport Park. (b) Borough Engineer, Town Hall. (c) 1gn. (e) Feb. 2.

* * *

HALIFAX B.C. (a) Block of offices and shops in George Street. (b) Borough Engineer, Crossley Street. (c) 2gns. (d) Jan. 7.

LINCOLN C.C. — PARTS OF KESTEVEN. (a) Conversion of huts ments at Shirley Croft, Harrowby Road, Grantham, to form classrooms, sanitary accommodation, canteen scullery, etc. (b) County Architect, County Offices, Sleaford. (e) Jan. 19.

* * *

LONDON—BARNES B.C. (a) Extension to the "Lonsdale Stores," Windermere Court, Lonsdale Road, S.W.13. (b) Borough Surveyor, Municipal Offices, Sheen Lane, S.W.14. (e) Jan. 18.

* * *

LYME REGIS B.C. (a) 6 bungalows off Kingsway. (b) Messrs. Lucas, Roberts and Brown, Barnfield Hill, Exeter. (c) 3gns. (e) Jan. 7.

* * *

N. IRELAND—DOWN E.A. (a) Primary school in Medway timber construction at Clintagh, Ballynahinch. (b) Mr. J. Wright, 2, Linenhall Street, Belfast. (c) £5. (e) Jan. 16.

* * *

N. IRELAND—FERMANAGH C.E.C. (a) Sanitary annexe, woodwork shop, alterations, etc., at the Technical School, Enniskillen. (b) Committee's Architect, 27, High Street, Enniskillen. (c) 2gns. (e) Jan. 22.

* * *

NOTTINGHAM AND DISTRICT TECHNICAL COLLEGE. (a) Minor alterations and fire precautions to Engineering Block, Nottingham and District Technical College, Shakespeare Street. (b) City Engineer, The Guildhall. (c) £2. (e) Jan. 12.

* * *

NOTTINGHAM C.C. (a) Police operational centre at Bilborough. (b) City Engineer, The Guildhall. (c) £2. (e) Jan. 8.

* * *

RAMSGATE B.C. (a) War damage reinstatement of the Club House building, Hangar and Customs House, Municipal Airport, Pysons Road. (b) Borough Engineer, Municipal Buildings. (c) 5gns. (e) Jan. 10.

* * *

RICKMANSWORTH U.C. (a) 142 houses in Berry Lane Estate, in two contracts of 76 dwellings and 66 dwellings. (b) Engineer and Surveyor, Council Offices, immediately, giving names of Local Authorities for whom similar works have been carried out in the last three years. (c) 3gns.

* * *

TADCASTER R.C. (a) (1) 14 houses at Aberford, (2) 6 houses and 4 flats at Bishopthorpe, (3) 4 houses at Copmanthorpe, (4) 26 houses and 8 old persons' dwellings at Micklefield, (5) 8 houses at Sherburn-in-Elmet, (6) 4 flats at Swillington, (7) 2 houses at Neville Grove, and (8) 4 houses at Towton, with incidental drainage and services. (b) Messrs. Anthony Steel and Owen, 89, Albion Street, Leeds, 1 (indicating sites). (c) 2gns each group, payable to Council. (e) Jan. 10.

* * *

TORQUAY B.C. (a) Public conveniences in Reddenhill Road, Babbacombe. (b) Borough Surveyor, Town Hall. (c) 2gns. (d) Dec. 31.

* * *

WAKEFIELD C.C. (a) Erection of fried fish shops at Greenhill Road and Warmfield View. (b) City Engineer, Town Hall. (e) Jan. 8.

* * *

WINDSOR R.C. (a) Block of 3 houses at corner of Brockenhurst Road and Victoria Road, South Ascot. (b) Building Surveyor, Council Offices, Bowden Road, Sunninghill. (c) 2gns. (d) Dec. 22. (e) Jan. 10.

WORTHING R.C. (a) 20 houses, Arundel Road, Angmering. (b) Engineer and Surveyor, 15, Mill Road. (c) 2gns. (e) Jan. 7.

* * *

WORTHING R.C. (a) 8 houses in 2 blocks at Irene Avenue Estate, Lancing. (b) Engineer and Surveyor, 15, Mill Road. (c) 2gns. (e) Jan. 7.

* * *

WORTHING R.C. (a) 5 pairs of houses at Halewick Lane, Sompting. (e) Engineer and Surveyor, 15, Mill Road. (c) 2gns. (e) Jan. 7.

* * *

YORK C.C. (a) 100 houses, Moor Lane Estate. (b) City Engineer, Guildhall. (c) £5. (e) Jan. 12.

PLACED

Notes on contracts placed state locality and authority in bold type with (1) type of work, (2) site, (3) name of contractor and address, (4) amount of tender or estimate. † denotes that work may not start pending final acceptance, or obtaining of licence, or modification of tenders, etc.

BUILDING

LONDON COUNTY COUNCIL. (1) 11 blocks (230 dwellings). (2) Frampton Park Estate, Hackney. (3) E. H. Smith (Croydon), Ltd., 48, Wellesley Road, Croydon. (4) £500,099.

* * *

LONDON COUNTY COUNCIL. (1) 40 flats. (2) Goldsmith's Estate, Shoreditch. (3) F. Troy and Co., Ltd., Southwark, S.E. (4) £85,726. (1) Block of flats. (2) Lilestone Estate, St. Marylebone. (3) A. T. Rowley (London), Ltd., Tottenham. (4) £55,333. (1) 36 flats. (2) Vauxhall Gardens Estate, Lambeth. (3) Gee, Walker and Slater, Ltd., Park Lane, W.1. (4) £63,556.

* * *

LONDON COUNTY COUNCIL. (1) School. (2) Woolwich. (3) W. W. Rowney and Co., Ltd., Lambeth, S.E. (4) £25,800.

* * *

SHEFFIELD CORPORATION. (1) Erection of Stradbroke School. (3) Direct labour. (4) £110,669. (1) Erection of Greenhill School. (3) J. F. Finnegan (Sheffield), Ltd., 847, Eccleshall Road, Sheffield, 10. (4) £161,730.

* * *

SOUTH SHIELDS. (1) Block of flats. (2) Wellington Street. (3) Carruthers and Son, Heugh Terrace, South Shields. (4) £77,614. (1) Shops and flats. (2) Lizard Lane. (3) J. M. Black (Jun.), Ltd., Hebburn. (4) £25,197.

* * *

SUNBURY-ON-THAMES U.D.C. (1) Construction of refuse disposal works. (3) Wm. Moss and Sons, Ltd., North Circular Road, N.W.2. (4) £200,000.

* * *

BATH E.C. (1) Junior school. (2) Newbridge. (3) F. J. Blackmore and Son, Twerton-on-Avon, Bath. (4) £62,568.

* * *

NOTTINGHAMSHIRE C.C. (1) Primary school. (2) Kirkby-in-Ashfield. (3) Greenwoods (Mansfield), Ltd., 2, Wood Street, Mansfield.

* * *

MANCHESTER. (1) Erection of factory. (2) Western Road, for Aldhouse Milnes, Ltd. (3) T. Campion and Sons, Ltd., Ardwick, Manchester.

* * *

CUMBERLAND C.C. (1) R.C. secondary school. (2) Cleator Moor. (3) P. A. Baines and Son (N.), Ltd., Culgarth, Cumberland. (4) £99,639.

NEWCASTLE-ON-TYNE E.C. (1) Workshop block. (2) Rutherford College of Technology. (3) Alex. Anderson (Contractors), Ltd., 1, Stanmore Road, Newcastle. (4) £29,460.

* * *

CHESHIRE C.C. (1) Hostel. (2) Dukinfield. (3) B. Armitage, Stockport Road, Hyde, Cheshire. (4) £43,328.

* * *

HERTFORDSHIRE C.C. (1) Hostel. (2) Institute of Agriculture, Oaklands, St. Albans. (3) Messrs. Bickerton, Seymour Road, St. Albans. (4) £16,843.

* * *

LEICESTERSHIRE C.C. (1) County home. (2) Adjacent Knighton House, Leicester. (3) H. W. Stater (Birstall), Ltd., Birstall, Leics.

* * *

HAMMERSMITH B.C. (1) Shops and flats. (2) Tunis and Uxbridge Roads. (3) Direct labour. (4) £25,755.

* * *

HETTON-LE-HOLE U.D.C. (1) 53 houses. (2) Brickgarth site. (3) Direct labour. (4) £70,050.

* * *

HAMPSHIRE C.C. (1) War damage reinstatement. (2) Tauntons School, Southampton. (3) Mullen and Lumsden, 151, Romsey Road, Shirley, Southampton. (4) £33,888 (lowest).

* * *

DONCASTER CORPORATION. (1) Infants' school. (2) Clay Lane. (3) Exors. of T. A. Hanson, of Doncaster. (4) £23,216.

* * *

EAST GRINSTEAD U.D.C. (1) 40 dwellings. (2) Brackwell Farm. (3) S. D. Chapman, Ltd., 418, Limpsfield Road, Warlingham, Surrey. (4) £65,332.

OFFICIAL ANNOUNCEMENTS

APPOINTMENTS • CONTRACTS • TENDERS

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APPOINTMENTS

LONDON ELECTRICITY BOARD.

ARCHITECTURAL DRAUGHTSMEN.

APPLICATIONS are invited for the above positions in the Architect's Section of the Chief Engineer's Department in Central London.

Applicants should be neat draughtsmen and preferably have had several years' experience in an architect's office.

The posts have been graded under Schedule "D" of the National Joint Board agreement as Grade 6—£438 to £574 7s per annum inclusive of London Allowance.

Application forms from Establishments Officer, 46, New Broad St., E.C.2, to be returned duly completed by 14th January, 1952. Please enclose addressed foolscap envelope and quote ref. V/1256/AA on all correspondence. [6054

LONDON ELECTRICITY BOARD

SENIOR DRAUGHTSMAN
ENGINEERING DRAUGHTSMEN
DRAWING OFFICE JUNIOR

APPLICATIONS are invited for the following vacancies in the South-Western Sub-Area. The successful applicants will be required to work initially at the locations shown, but must be prepared in the future, to work at any other drawing office within the Sub-Area.

SENIOR DRAUGHTSMAN at Wimbledon, S.W.19.

Candidates should have good technical qualifications and considerable experience in recording and design of distribution systems, including layout of substations, and be capable of supervising Engineering Draughtsmen and Junior Draughtsmen. A knowledge of building construction would be an advantage.

The post is graded under Schedule "D" of the National Joint Board agreement as Grade 5—£574 7s to £683 11s per annum inclusive of London Allowance.

ENGINEERING DRAUGHTSMEN at Wimbledon, S.W.19, and Clapham Junction, S.W.11.

Candidates should have had a good technical education and should be neat and accurate draughtsmen with experience in the preparation and maintenance of mains records and system diagrams including the associated calculations.

The posts are graded under Schedule "D" of the National Joint Board agreement as Grade 6—£438 to £574 7s per annum inclusive of London Allowance.

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Candidates should preferably have had or be undergoing technical education and have had experience in a drawing office of tracing and printing. Cartographic experience would be an advantage.

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ARCHITECTURAL ASSISTANTS required by WAR DEPARTMENT for SCOTTISH COMMAND EDINBURGH. Applicants must be British of British parentage and have a recognized training and not less than three years' experience in an Architect's Office. Starting salary in accordance with applicant's age, experience and ability on a range of £330-£560 (slightly less if employed outside the Edinburgh or Glasgow areas) with annual increases subject to satisfactory service. Successful applicants will be employed on work of considerable variety, including permanent military establishments, industrial development, housing and flats. Apply in writing giving age, nationality and full details of qualifications and experience to Ministry of Labour and National Service, 174-182, Lauriston Place, Tollcross, Edinburgh, 3, quoting Order No. 3590. [6048

APPOINTMENTS—contd.

GLENROTHES DEVELOPMENT CORPORATION.

APPLICATIONS are invited from suitably qualified persons, under 45 years of age, for the appointment of an ARCHITECT-PLANNER. The salary scale is £800 x £50—£950, with placing according to qualifications and experience. Applicants should be Associates, or equivalent of the Royal Institute of British Architects and the Town Planning Institute with general architectural and planning experience, particularly in the field of civic design including layout of large residential developments, central, and industrial areas.

The Corporation will give every assistance in securing housing accommodation, if required. The post will be superannuable under the Local Government Superannuation (Scotland) Act, 1937, and the successful candidate will require to pass a medical examination. Applications, with details of age, qualifications and experience, together with names of three referees, must reach the Secretary, Glenrothes Development Corporation, Woodside, Glenrothes, by Markinch, not later than 11th January, 1952. [6055

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THERE are vacancies in the Chief Architect's Division for ARCHITECTURAL ASSISTANTS and LEADING ARCHITECTURAL ASSISTANTS with recognised training and fair experience. Successful candidates will be employed in London and elsewhere on a wide variety of Public Buildings, including Atomic Energy and other Research Establishments.

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Although these are not established posts, many of them have long term possibilities and competitions are held periodically to fill established vacancies.

Apply in writing, stating age, nationality, full details of experience, and locality preferred, to Chief Architect, Ministry of Works, Abell House, John Islip Street, London, S.W.1, quoting reference WG10/BS. [5763

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ARCHITECTURAL APPOINTMENTS VACANT—contd.

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IMPERIAL CHEMICAL INDUSTRIES, Ltd., General Chemicals Division, require one or two Assistant Architects in the Architectural Section of their Chief Engineer's Department, Runcorn. Applicants should have had good experience in design and the preparation of working drawings. Other factors being equal, preference will be given to those who have passed the final examination of the R.I.B.A. Salary dependent on age and experience. Membership of Pension Fund.—Apply in writing, quoting E/81, to Staff Manager, Imperial Chemical Industries, Ltd., General Chemicals Division, Cunard Building, Liverpool, 3. [6037

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WANTED.—Architectural draughtsman in West of England City Office, salary £350 per annum, apply stating age, qualifications and experience.—Box 5905. [6040

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ENGINEER/agent required for large B. & C.E. contract in Southern England; applicants of the highest ability only need apply and must produce references from well-known firms for which they have worked; salary, etc., to be discussed at interview.—Write Box 835, c/o Geo. Murray (Advt.), Ltd., 184, Strand, London, W.C.2. [6011

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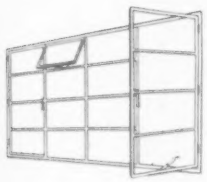

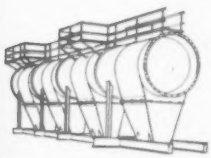

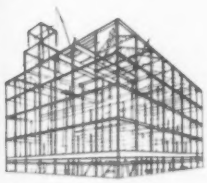

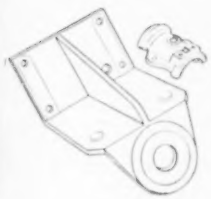

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